UNITED STATES DISTRICT COURT
DISTRICT OF VERMONT

JAMES D. SULLIVAN et al., individually, and on behalf of a Class of persons similarly situated, *Plaintiffs*, v. SAINT-GOBAIN PERFORMANCE PLASTICS CORPORATION, *Defendant*.	Case No. 5:16-cv-00125-GWC Hon. Geoffrey W. Crawford

MEMORANDUM OF LAW IN SUPPORT OF SAINT-GOBAIN'S MOTION TO EXCLUDE PLAINTIFFS' EXPERT TESTIMONY

TABLE OF CONTENTS

Page

TABLE OF CONTENTS
(continued)

Page

TABLE OF CONTENTS
(continued)

Page

TABLE OF AUTHORITIES

Page(s)

Cases

Statutes and Rules

Other Authorities

PRELIMINARY STATEMENT

Plaintiffs seek to proffer eight experts in support of their quest for medical monitoring and property damages on behalf of putative classes of persons allegedly affected by perfluorooctanoic acid (PFOA) in Bennington and North Bennington, Vermont. PFOA was a widely used substance in many applications for nearly half a century. Until just before the start of this litigation, it was not regulated by Vermont law. Even to this date, no scientific study or regulatory body has found that PFOA causes the conditions for which Plaintiffs seek monitoring. No public health authority has recommended medical monitoring for any condition arising out of PFOA exposure. And though Saint-Gobain's predecessor, Chemfab, has not operated in Vermont for more than a decade, Saint-Gobain agreed to fund the extension of water lines to hundreds of individuals whose wells had PFOA detected above Vermont's recently instituted limits, one of the lowest in the country.

Despite all this, Plaintiffs' experts say that PFOA causes an array of ailments and that everyone with PFOA above background levels should receive medical monitoring for 30 years. They also claim that, despite its ubiquitous use in this country and the complexity of Vermont climate and geology, all the PFOA in Bennington and North Bennington can be attributed to Chemfab alone. They say that local residents have actually been harmed by the municipal water extensions and that Saint-Gobain should be required to subsidize the Town of Bennington's "wish list" for infrastructure improvements as damages. Most notably, they say all of this can be established on a common basis as a class action for the untold thousands of individuals who have resided in the putative class area over the last 50 years.

"'[E]xpert evidence can be both powerful and quite misleading.'" *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595 (1993) (citation omitted). It is thus critical for this Court to exercise its "gatekeeping role" to "ensure that any and all scientific testimony or evidence admitted

is not only relevant, but reliable." *Id.* at 589, 597. That duty takes on particular weight here because of the gravity and class-wide scope of the claims made by Plaintiffs' experts, whose testimony in support of class certification must also pass through *Daubert*'s gates.

The testimony of the five experts identified by Plaintiffs in support of class certification is inadmissible due to lack of "fit," or relevance, to class certification. Expert testimony fits class certification where it shows that an element of Rule 23 can be established by common proof. But none of Plaintiffs' experts even purports to establish anything as to any particular member of the putative class, much less anything amenable to class-wide proof. Instead, Plaintiffs' experts rely on the convenient fiction of "average" or "hypothetical" class members to gloss over the individual issues that pervade their claims. As a result, none of Plaintiffs' expert testimony can support class certification because they cannot prove anything about any putative class member, much less so on a common basis. Their medical monitoring expert does not even consider the individual circumstances of the named Plaintiffs, let alone the absent putative class members, as to whom he admits there are multiple individual differences relative to medical monitoring. Their "fate and transport" experts admit that none of their opinions can show the presence, amount, or source of PFOA at any property in the class area. And their groundwater damages expert computes only the damages of a purported "average" class member—not any actual class members, whose individual circumstances he does not even consider. In conducting the required scrutiny of expert testimony proffered for class certification, this lack of "fit" is alone sufficient to warrant the denial of Plaintiffs' motion for class certification.

Plaintiffs' expert testimony in support of class certification is also unreliable. Among many other things, the failure of their medical monitoring expert to consider any of the admittedly varied individual circumstances of the Plaintiffs and putative class members is fatal to the

reliability of his opinion. Likewise, Plaintiffs' fate and transport experts ignored actual data regarding Chemfab's facilities and the putative class, and instead developed opinions that are arbitrary, litigation-driven, and ungrounded in science or reality. And their groundwater damages expert cannot reliably opine on the damages of the putative class members when he ignores all plaintiff-specific data and the wide variation throughout the putative class. These many defects provide independent and additional grounds for denial of class certification.

Finally, Plaintiffs' experts' merits opinions—some of which overlap with class certification issues—are also inadmissible. Plaintiffs' expert testimony proffered in support of medical causation is based on subjective and standardless methodologies. Contrary to the well-settled requirements for scientific evaluation of medical causation, these experts pick the studies they like, ignore the ones they do not like, fail to address study limitations, improperly conflate association with causation, and muddle the issue of dose. Second, the various legal opinions offered by Plaintiffs' experts—that Chemfab violated regulations or acted unreasonably, or that Vermont law allows individual Plaintiffs to opine on diminution in value—improperly interfere with this Court's sole duty to decide the law. They should be excluded.

Because of the large volume of Plaintiffs' expert testimony, even this omnibus brief is insufficient to catalog all of the methodological and other errors in Plaintiffs' expert testimony. Saint-Gobain addresses the errors below for illustrative purposes, and without waiver of similar or other defects, which are addressed in Saint-Gobain's expert reports and incorporated herein.

BACKGROUND

Plaintiffs have disclosed a total of nine expert witnesses. Saint-Gobain has deposed them all, and some of them twice. Saint-Gobain has disclosed ten experts in this case. Plaintiffs have not attempted to depose any of them. Their time to do so has now lapsed. (Dkt. 195 at 1.)

Plaintiffs disclosed their experts at three stages and for three purported purposes: (A) class certification; (B) merits; and (C) rebuttal. For context, Saint-Gobain outlines the substance of their opinions and the primary bases of its challenges to their admissibility below.

A. Plaintiffs' Class Certification Experts

Plaintiffs seek certification of the following two proposed classes:

> **Exposure Class:** "All persons, whether minor or adult, including any person claiming by, through, or under a Class Member, who, as of the time a class is certified in this case, have resided in the Zone of Contamination and have ingested PFOA-contaminated water in the Zone of Contamination and who have suffered accumulation of PFOA in the bodies as demonstrated by blood serum tests disclosing a PFOA level in their blood above the recognized background levels."
>
> **Property Class:** "All natural persons, whether minor or adult, including any person claiming by, through or under a Class Member, who have interests in real property within the Zone of Contamination, including, but not limited to, those persons whose private water supply wells have been found to be contaminated with PFOA above 20 ppt."

(TAC, Dkt. 113, ¶ 77.) Plaintiffs define the zone referred to above as "those areas … designated by the State of Vermont as 'Designated Areas of Concern in North Bennington and Bennington' on April 26, 2016, the boundaries of which being most recently delineated on April 17, 2017." (*Id.* ¶ 76.) Plaintiffs disclosed five experts in support of class certification, as follows.

1. Dr. Alan Ducatman (Medical Monitoring)

Plaintiffs proffer the opinions of Alan Ducatman, M.D., in support of class-wide medical monitoring. (Dkt. 107-1 at 28-29; Ducatman Class Rpt. at 1.) [1] Dr. Ducatman opines that medical monitoring for an array of alleged ailments should be offered to individuals who have ever resided in the proposed class area, have consumed water allegedly containing PFOA, and have blood

[1] All non-docket documents cited herein are submitted with Saint-Gobain's omnibus Declaration and Exhibits, in which they may be located in the table of contents or the index by their short citation used in this brief.

serum concentrations of PFOA above the national average. (Ducatman Merits Rpt. at 1, 19-25; Ducatman Tr. at 96:23-97:10.)

Like those of Plaintiffs' other experts, these opinions suffer from several fundamental flaws that render them inadmissible under *Daubert* and Rules 702 and 403. Dr. Ducatman admits to, but ignores, the many "considerable individual differences" that pervade the putative class. He did not speak to or examine any Plaintiff or even so much as review a single medical record before rendering his opinions. (Ducatman Tr. at 37:8-19.) He does not even know the ages of the named Plaintiffs. (*Id.* at 195:6-13.) Rather than speaking with any of their physicians, he "imagine[s him]self sitting with" and "talking with the doctors [in] Bennington in [his] mind." (*Id.* at 133:2-134:11; 166:7-16; 173:22-174:4.) His opinions do not "fit" the issues in this matter and cannot reliably address class-wide medical monitoring, as further explained by Saint-Gobain's experts, Drs. Philip Guzelian and Jeffrey Mandel. (Guzelian Rpt. at 94-126, 341-42; Guzelian Reb. Rpt. at 3-12, 21-41; Mandel Rpt. at 87-100, 121-28; Mandel Reb. Rpt. at 106-11, 114-15.)

Dr. Ducatman's medical causation opinion is similarly deficient. Among its many flaws, it fails to follow an objective methodology and deviates from established scientific methods for determining causation, as further explained by Saint-Gobain's experts Drs. Edward Calabrese, Guzelian, and Mandel. (Calabrese Rpt. at 5-32; Guzelian Rpt. at 126-341; Guzelian Reb. Rpt. at 2-3, 12-19; Mandel Rpt. at 28-87, 101-21; Mandel Reb. Rpt. at 101-06.) Nor can he cure the defects in his methodology through his rebuttal report. (Ducatman Reb. Rpt.)

2. Dr. Philip Hopke (Air Emissions)

[redacted]

[redacted] His opinion is the first piece in Plaintiffs' fate and transport proffer, which was, in turn, relied upon by Gary Yoder, who proffered an air deposition model, and Donald Siegel, Ph.D., who proffered a hydrogeological opinion. But Dr. Hopke's methods are unreliable.

[redacted] (Chinkin Rpt. at 29-30.) Importantly, Dr. Hopke does not consider any actual emissions data from Chemfab facilities. As another of Plaintiffs' experts acknowledged, his estimates are thus "arbitrary" (Yoder Tr. at 76:12-24), divorced from the actual facts at issue. Moreover, Dr. Hopke changed his opinions on chemical processes over the course of this litigation. [redacted] (Hopke Class Rpt. at 2-4.) But he changed his opinion in his rebuttal report. (Hopke Reb. Rpt. at 1-2; Hopke Reb. Tr. at 130:16-132:2.) [redacted] (Chinkin Reb. Rpt. at 8-11.)

[redacted] (Hopke Merits Rpt. at 1), [redacted] (*Id.* at 6.) These opinions are not grounded in any discernable scientific methodology and should be excluded, as explained by Saint-Gobain's regulatory expert, Felix Flechas. (Flechas Rpt. at 16-18.)

3. Gary Yoder (Air Transport)

[redacted] (Yoder Class Rpt. at 1, 4-5; Yoder Reb. Rpt. at 1.) [redacted]

[redacted] Moreover, while Plaintiffs proffer Mr. Yoder's opinion to support class certification, it does not fit that task. [redacted] He admits he cannot determine on a common basis the presence, amount, or source of PFOA at any given property, much less at any given time. (Yoder Tr. at 162:8-163:19.)

4. Dr. Donald Siegel (Groundwater Transport)

Plaintiffs also proffer Dr. Siegel to "present common proof" of PFOA in "the class members' properties, wells, and underlying groundwater." (Mot. for Cert., Dkt. 107-1, at 20; Siegel Class Rpt. at 1-1.) Yet like Mr. Yoder, Dr. Siegel admits that his groundwater opinion is unable to determine on a common basis either the presence or the amount of PFOA at any specific location in the proposed class area. (Siegel Tr. at 33:7-34:14, 57:4-14.) Nor can Dr. Siegel say when PFOA arrived at any particular property or when it will dissipate. Instead, Dr. Siegel performs a "back of the envelope" analysis, based not on any actual data from the class area, but on two hypothetical areas one-square meter in size, ignoring individual variations across the proposed class area. (*Id.* at 100:22-24, 104:12-105:10.) His testimony thus does not "fit" class certification.

[redacted] (Morrissey Rpt. at 16-32.) [redacted] (Siegel Class Rpt. at 4-1 to 5-1; Siegel Class Reb. Rpt. at 2-16 to 2-19; Morrissey Rpt. at 25, 28-32; Morrissey Reb. Rpt. at 2, 7-14.)

Beyond his fate-and-transport opinion, Dr. Siegel offers a merits opinion similar to Dr. Hopke's, in which he purports to opine on what ChemFab "either knew or should have known" about its emissions. (Siegel Merits Rpt. at 2-5.) Dr. Siegel admits that these opinions are "speculation" based on his reading of documents selected by Plaintiffs' counsel. (Siegel Tr. at 22:23-23:11, 204:18-205:9; Hopke Tr. at 33:7-34:2.) This opinion is not grounded in any scientific methodology and is inadmissible.

5. Robert Unsworth (Groundwater Damages)

Plaintiffs initially proffered Mr. Unsworth "to identify reliable and appropriate measures of groundwater damages" for the putative class, and to quantify those damages. (Unsworth Class Rpt. at 1.) He opines on two measures of damages: (1) an "added cost" opinion that purports to calculate the additional cost experienced by proposed class members who transitioned from private wells to municipal water systems (Unsworth Merits Rpt. at 10-15); and (2) a "replacement cost" opinion on water infrastructure improvements to offset the "loss of the option to utilize groundwater." (*Id.* at 15-19.) [redacted] (Mullin Rpt. at 3-5, 24-43; Mullin Reb. Rpt. at 7-9.) Likewise, Mr. Unsworth's replacement cost opinion does not fit class certification because it addresses compensation for the public and the local water utility, not the putative class members. (Unsworth Reb. Tr. at 172:9-173:19; Unsworth Mullin Reb. Rpt. at 24-25.)

In addition, Mr. Unsworth proffered a rebuttal to the opinions of Saint-Gobain's experts Dr. Thomas Jackson and Trevor Phillips [redacted] (Jackson Rpt. at 5-21; Phillips Rpt. at 15-51; Jackson-Phillips Class Data Rpt.; Unsworth Prop. Reb. Rpt. at 1-4.) Yet Mr. Unsworth stated that Plaintiffs

were not even "seeking class certification for purposes of establishing monetary damages associated with property value diminution" [redacted] (Unsworth Prop. Reb. Rpt. at 1-2; Jackson Reb. Rpt. at 9; Phillips Reb. Rpt.) Instead, he offered only the inadmissible legal opinion that the Plaintiffs should be entitled to testify to their alleged diminution in value, without regard to whether their opinions were reliable. (Unsworth Prop. Reb. Rpt. at 7.)

B. Plaintiffs' Additional Merits Experts

Plaintiffs disclosed three additional "merits" experts: Edgar Gentle, Donald Brandt, and Donald Shepard. Each of them opined on some aspect of the valuation or feasibility of the medical monitoring program proposed by Dr. Ducatman. Their opinions are derivatively inadmissible because they are premised entirely on Dr. Ducatman's inadmissible opinion. (Gentle Rpt. at 1; Brandt Rpt. at 3, 8; Shepard Rpt. at 3.)

C. Plaintiffs' "Rebuttal" Experts

1. Dr. Philippe Grandjean (General Causation)

After Saint-Gobain served its expert reports, Plaintiffs sought leave to serve rebuttal reports, which the Court granted. In particular, they sought to proffer the report of Philippe Grandjean, MD, MSc, who they said was "going to be targeting like a laser only three expert opinions of [the] defense" concerning medical issues. (Dkt. 183 at 5, 26.) In fact, Dr. Grandjean served a blunderbuss 112-page report, all but about eight pages of which were substantially copied and pasted from a case-in-chief report served little more than a month earlier in related PFOA litigation in New Hampshire. (Grandjean Rpt.; Grandjean Rpt. Redline.) In addition, Plaintiffs have stipulated they will not offer Dr. Grandjean's opinion on the issue of medical monitoring. For these reasons and others, Saint-Gobain has simultaneously moved to strike those portions of Dr. Grandjean's report that do not constitute proper rebuttal testimony. (Dkt. 192.)

In addition to running afoul of the Court's order on the scope of rebuttal, Dr. Grandjean's opinion is inadmissible for many of the same reasons as Dr. Ducatman. Dr. Grandjean invokes a "weight of the evidence" methodology, but as his report and testimony confirm, that methodology is designed for preventive regulatory risk assessments—not tort claims in litigation. Nor does Dr. Grandjean apply any scientific standards in his purported use of that method, which amounts to a black box in which he subjectively selects or disregards evidence in an unprincipled and unscientific fashion. Like Dr. Ducatman, his causation opinions start from an arbitrarily selected exposure threshold and proceed to infer causation in a manner that disregards the principles he admits should guide scientific inquiry. These defects and many others are set forth below and in the rebuttal reports of Drs. Sorell Schwartz, Calabrese, Mandel, and Guzelian. (Schwartz Reb. Rpt. at 4-14; Calabrese Reb. Rpt. at 1-7, 11-12; Mandel Reb. Rpt. at 7-100; Guzelian Reb. Rpt. at 42-91.)

2. David Mears (Regulatory)

Finally, Plaintiffs proffered on rebuttal the opinion testimony of David Mears. Because Dr. Hopke lacked any regulatory experience, Mr. Mears purports to "adopt Dr. Hopke's opinions concerning Defendant's violations of Vermont's air pollution regulations and rely upon the documents he relied upon." (Mears Reb. Rpt. at 1-2.) This narrative legal opinion is unhelpful to the Court and is inadmissible for the same reasons as Dr. Hopke's opinion, as well as the reasons outlined in the rebuttal report by Mr. Flechas. (Flechas Reb. Rpt.)

THRESHOLD SCRUTINY OF EXPERT TESTIMONY

"'[B]ecause expert witnesses are not necessarily always unbiased scientists,'" determining the admissibility of expert testimony requires "close judicial analysis." *Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244, 252 (6th Cir. 2001) (citation omitted). In conducting this threshold analysis, courts must exclude expert testimony that is not "based on sufficient facts or data," is not

"the product of reliable principles and methods," or has not "reliably applied the principles and methods to the facts of the case." Fed. R. Evid. 702. These "exacting standards of reliability," *Weisgram v. Marley Co.*, 528 U.S. 440, 455 (2000), furnish "the district court the discretion needed to ensure that the courtroom door remains closed to junk science." *Amorgianos v. Nat'l R.R. Passenger Corp.*, 303 F.3d 256, 267 (2d Cir. 2002). Courts must ensure the expert "employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999); *see also Braun v. Lorillard Inc.*, 84 F.3d 230, 234-35 (7th Cir. 1996); *Watkins v. Telsmith, Inc.*, 121 F.3d 984, 990 (5th Cir. 1997); *Allen v. Pa. Eng'g Co.*, 102 F.3d 194, 198-99 (5th Cir. 1996). "[T]he courtroom is not the place for scientific guesswork, even of the inspired sort. Law lags science; it does not lead it." *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 319 (7th Cir. 1996).

A. Plaintiffs Bear the Burden of Proving Admissibility

Plaintiffs, as the proponents of the expert evidence, bear the burden of showing it is admissible. *Rotman v. Progressive Ins. Co.*, 955 F. Supp. 2d 272, 281 (D. Vt. 2013). Saint-Gobain does ***not*** bear the burden of demonstrating inadmissibility. *Soldo v. Sandoz Pharms. Corp.*, 244 F. Supp. 2d 434, 534 (W.D. Pa. 2003). The *Daubert* inquiry carefully distinguishes between the threshold reliability that Plaintiffs must satisfy and the role of cross-examination. "Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky ***but admissible*** evidence. ... These conventional devices ... are the appropriate safeguards ***where*** the basis of scientific testimony ***meets the standards*** of Rule 702." *Daubert*, 509 U.S. at 596 (emphasis added).

B. Expert Testimony Must "Fit" the Facts of the Case

When deciding whether an expert's opinion is relevant, the Court must ensure that it "fits" the facts of the case. *Id.* at 591-92. The district court acts as a "gatekeeper" to ensure that evidence

presented is reliable and "relevant to the task at hand." *Id.* at 597. Expert testimony is properly excluded if it is "not scientifically reliable as applied to this case." *United States v. Mazzeo*, 205 F.3d 1326 (2d Cir. 2000). Thus, for example, an expert's opinion on "hypothetical" circumstances, rather than the facts at issue, shows a "lack of familiarity with the case" that affects both "the certainty of his conclusion" and whether it "fit[s] the facts of the case." *Owens v. Auxilium Pharm., Inc.*, 895 F.3d 971, 973 (7th Cir. 2018).

C. Expert Opinion Requires Reliable Application of Reliable Methods

"[T]he trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert*, 509 U.S. at 589. "[I]t is critical that an expert's analysis be reliable at every step." *Amorgianos*, 303 F.3d at 267. When "deciding whether a step in an expert's analysis is unreliable, the district court should undertake a rigorous examination of the facts on which the expert relies, the method by which the expert draws an opinion from those facts, and how the expert applies the facts and methods to the case at hand." *Id.* "[A]ny step that renders the analysis unreliable under the *Daubert* factors renders the expert's testimony inadmissible." *Id.* (citation omitted). "This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 745 (3d Cir. 1994) (emphasis omitted).

While the *Daubert* inquiry is "a flexible one," there are general factors for determining reliability. *Daubert*, 509 U.S. at 593-94. Of particular importance is whether "the theory ... can be (and has been) tested." *Id.* at 593. Another factor is whether the theory has been subjected to evaluation by peer review and publication. *Id.* A third factor is the known or potential rate of error and the existence and maintenance of standards controlling the technique's operation. *Id.* at 594. A final consideration is whether the theory has been generally accepted in the scientific community. *Id.* These factors are "neither definitive nor exhaustive, however, and some factors

may be more pertinent than others depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony." *Newman v. Motorola, Inc.*, 218 F. Supp. 2d 769, 773 (D. Md. 2002) (citation omitted), *aff'd*, 78 F. App'x 292 (4th Cir. 2003). "'[E]xpert evidence can be both powerful and quite misleading.'" *Daubert*, 509 U.S. at 595 (citation omitted).

Though *Daubert* addresses methods, "conclusions and methodology are not entirely distinct from one another,'" *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997), and the difference "has only limited practical import." *Paoli*, 35 F.3d at 746. "When a judge disagrees with the conclusions of an expert, it will generally be because he or she thinks that there is a mistake at some step in the investigative or reasoning process of that expert." *Id.* "A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered" and preclude the testimony. *Joiner*, 522 U.S. at 146. A court should exclude expert testimony "that is connected to existing data only by the *ipse dixit* of the expert." *Id.*

D. *Daubert* Applies to Expert Testimony in Support of Class Certification

These standards apply to expert testimony submitted at the class certification stage. The Supreme Court has expressed "doubt" that expert testimony could be admitted for class certification without satisfying the *Daubert* standard. *Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 354-55 (2011). A majority of the courts of appeals that have considered the question hold that *Daubert* and Rule 702 apply when deciding whether it is appropriate to certify a class. *In re Blood Reagents Antitrust Litig.*, 783 F.3d 183, 187 (3d Cir. 2015); *Am. Honda Motor Co. v. Allen*, 600 F.3d 813, 815-16 (7th Cir. 2010); *Sher v. Raytheon Co.*, 419 F. App'x 887, 890-91 (11th Cir. 2011); *Unger v. Amedisys Inc.*, 401 F.3d 316, 323 n.6 (5th Cir. 2005). While the Second Circuit has not yet addressed the issue, it has rejected the notion that expert evidence may be considered on class certification simply because it is not "fatally flawed." *In re IPO Sec. Litig.*, 471 F.3d 24, 42 (2d Cir. 2006), *clarified on reh'g*, 483 F.3d 70 (2d Cir. 2007).

Expert testimony proffered in support of class certification must be "relevant" as to the elements of Rule 23. *See In re Hydrogen Peroxide Antitrust Litig.*, 552 F.3d 305, 323-25 (3d Cir. 2008). To be relevant and reliable on the critical issue of commonality, such evidence must reliably show that dispositive issues in the case are "capable of class-wide resolution." *Dukes*, 564 U.S. at 350. Because it is a "core principle that class actions are the aggregation of individual claims, and do not create a class entity," it is not sufficient that such evidence determine some issue "on behalf of 'the class.'" *In re Asacol Antitrust Litig.*, 907 F.3d 42, 56 (1st Cir. 2018). Rather, the evidence must show that there is a reliable method to "resolve an issue that is central to the validity of ***each one of the claims*** in one stroke." *Dukes*, 564 U.S. at 350 (emphasis added). If the expert cannot do so, or cannot do so reliably, his testimony is not admissible. *Sher*, 419 F. App'x at 890-91.

ARGUMENT

I. PLAINTIFFS' EXPERTS' OPINIONS DO NOT "FIT" CLASS CERTIFICATION

Expert evidence in support of class certification must reliably show a method to establish a given issue central to the claims of each class member through common proof. Plaintiffs' class certification experts cannot and do not purport to do so. Their medical monitoring expert, Dr. Ducatman, did not consider anything about the circumstances of the named Plaintiffs, much less any individual putative class member, as to whom he admitted there were numerous "considerable individual differences." Likewise, Plaintiffs' three fate and transport experts—Dr. Hopke, Mr. Yoder, and Dr. Siegel—all deny that their methods can determine the presence, amount, or source of PFOA at any property in the proposed class area. And their damages expert, Mr. Unsworth, did not attempt a class-wide opinion on diminution in value but instead rendered a groundwater damages opinion based on class-wide "averages" and purported harm to the public.

Plaintiffs' experts cannot resort to "average" or "hypothetical" plaintiffs to mask the individual differences that permeate the claims of each putative class member. The "shortcut" of "abstract ... 'averages'" instead of "individual damages" is "a caution signal ... that class-wide proof of damages [i]s impermissible." *Broussard v. Meineke Discount Muffler Shops, Inc.*, 155 F.3d 331, 343 (4th Cir. 1998). "Attempts to meet the burden of proof using modeling and assumptions that do not reflect the individual characteristics of class members [are] met with skepticism." *Id.* (citations omitted). As such, courts exclude proffered class-wide proof based on an average or a representative analysis because it uses a "methodology [that] does not fit the present case." *LifeWise Master Funding v. Telebank*, 374 F.3d 917, 929 (10th Cir. 2004). "[C]ommunity-wide estimations [are] not ... probative of any individual's claim because any one class member may have an exposure level well above or below the average." *Gates v. Rohm & Haas Co.*, 655 F.3d 255, 266 (3d Cir. 2011). As a result, it presents an "insurmountable *Daubert* fit problem." *In re Pharmacy Benefit Mgrs. Antitrust Litig.*, 2017 WL 275398, at *20 (E.D. Pa. 2017).

A. Dr. Ducatman's Monitoring Opinions Do Not Fit Class Certification

Plaintiffs proffer Dr. Ducatman's opinions in support of their contention that the elements of medical monitoring, if recognized by Vermont law, can be decided on a common, class-wide basis. But Dr. Ducatman's testimony does not and cannot address that issue. He testified that many factors relevant to medical monitoring are individualized; consequently, as Plaintiffs concede, "it's going to be very, very difficult to get a class certified." (Dkt. 104 at 39.) Moreover, while Dr. Ducatman acknowledges the multitude of individual issues that characterize these claims, he made no attempt to address them, having not even looked at any of the named Plaintiffs' individual medical histories before reaching his opinions. His opinion thus does not provide a

common basis to find that monitoring is necessary for the actual members of the putative class and is not "relevant to the task at hand" for class certification. *Daubert*, 509 U.S. at 597.

1. Dr. Ducatman Admits Many "Considerable Individual Differences"

Plaintiffs argue that their medical monitoring claims present common issues, including PFOA exposure, increased risk of injury, and availability of medical monitoring that differs from routine care and would be useful in the early detection of disease. (Dkt. 107-1 at 28-29.) Dr. Ducatman's opinions cannot support that contention. In fact, his testimony completely undermines it. He readily admits to a litany of more than 15 "considerable individual differences" within the putative class as to each of these issues—so many he was "worried about not being complete":

Q. Among the individuals residing within the areas at issue in this matter would you expect there to be ***considerable individual differences*** as to their ***amount and length of exposures to PFOA***?
A. ***Yes.***
Q. Would you expect there to be ***considerable individual differences*** as to what their ***PFOA blood serum levels*** would be?
A. ***Yes.***
Q. Would you expect there to be ***considerable individual differences*** as to what their ***susceptibilities, if any,*** to PFOA might be?
A. ***Yes.***
Q. As to those ***individual differences*** and exposure of blood levels and susceptibilities, if any, would that be a function of a ***number of different variables***?
A. ***Yes.***
Q. And those ***individual differences*** would be a function of, among other things, their ***ages.*** Correct?
A. ***Age would be a variable.***
Q. And those ***individual differences*** would be a function of, among other things, their ***gender***. True?
A. ***Yes.***
Q. Those ***individual differences*** would be a function of, among other things, their ***physiology.*** Correct?
A. ***Yes.***
Q. Those ***individual differences*** would be a function of, among other things, ***how long they lived in the area.*** True?
A. ***Yes.***
Q. Those ***individual differences*** would be a function of, among other things, their rates of ***daily water consumption***. Correct?
A. ***Yes.*** And not just that, for the time that they lived near the factory also, you know, ***their tidal volume for breathing***, because that's another route of exposure.

Q. ***Those would all be different?***
A. ***Yes.***
Q. And the ***individual differences*** would also be a function of, among other things, the ***concentrations of PFOA*** in the water they drank. Correct?
A. ***Yes.***
Q. And those ***individual differences*** would also be a function of, among other things, their ***sources of water***. Correct?
…
A. ***Yes***, that's correct.
Q. And the ***individual differences*** would be a function of, among other things, their ***diet and nutrition.*** Correct?
A. There are differences between all of us from PFOA and PFOS contaminants based on ***diet and nutrition.*** …
Q. The ***individual differences*** would be a function of, among other things, ***drug and alcohol use***. Correct?
…
A. Okay. So if it's susceptibility, then the answer becomes ***yes.*** …
Q. And those ***individual differences*** would be a function of, among other things, their body weight and ***Body Mass Index or BMI***. Correct?
A. ***Yes.***
Q. And those ***individual differences*** would be a function of, among other things, their ***general state of health as well as other medical conditions***. Correct?
A. ***Yes.***
Q. And those ***individual differences*** would be a function of, among other things, their ***occupational histories***. Correct?
A. If their occupation had exposure to perfluoroalkyl substances, that would be another and ***very important route of exposure***.
Q. In your opinion, what else, if anything, would those ***individual differences*** in either exposures, blood levels or susceptibility to PFOA, if any, be a functions of?
A. Okay. I don't remember all the things you mentioned, but let me go down a list of things that we often adjust for. So—and you may think you included these under general health, but ***renal function*** would certainly be one. … Then another one that you may have mentioned and I simply don't remember is drugs. … ***There are so many things. I'm a little worried about not being complete.***

(Ducatman Tr. at 55:25-61:6 (emphasis added).)[2] This testimony is irreconcilable with the notion of class-wide proof of medical monitoring, precisely as other federal courts have held in other PFOA litigation seeking medical monitoring. *Rowe v. E.I. duPont de Nemours & Co.*, 2008 WL

[2] Though Dr. Grandjean's opinion was not proffered in support of class certification, he nevertheless agrees with Dr. Ducatman's assessment of the individualized nature of these factors. (Grandjean Tr. at 16:2-23:21.)

5412912, at *17, 20-21 (D.N.J. 2008); *Rhodes v. E.I. duPont de Nemours & Co.*, 253 F.R.D. 365, 374-76 (S.D. W. Va. 2008), *appeal dism'd*, 636 F.3d 88, 98-101 (4th Cir. 2011). It should be excluded.

2. Dr. Ducatman Proposes Monitoring For Hypothetical Residents

Despite acknowledging these many individualized differences relative to medical monitoring, Dr. Ducatman failed to account for any of them in developing in his opinion. He had no Plaintiff-specific information. He did not speak to or examine any of the Plaintiffs. (Ducatman Tr. at 37:8-13.) He did not review any of their medical records. (*Id.* at 37:14-17.) He does not even know their ages. (*Id.* at 195:6-13.) Nor does he know anything about their interrogatory answers. (*Id.* at 45:8-12.) He thus has no basis to opine on the effect of the many considerable individual differences that he acknowledges. For instance, he knows nothing about any Plaintiff's average daily water consumption or the proportion of it that typically came from tap water versus bottled water. (*Id.* at 39:11-21.) Nor can he say whether any Plaintiff's water consumption practices and patterns were typical of those of absent class members. (*Id.* at 39:22-40:2.) Nor does he know anything about the routine medical care that the Plaintiffs already receive from their physicians.

Instead of addressing data for the actual members of the putative class, Dr. Ducatman simply relies on a set of unfounded assumptions about "member[s] of the Exposure Class," and opines based on that. (Ducatman Merits Rpt. at 5.) Because his opinion only concerns "hypothetical" Plaintiffs, not the actual Plaintiffs and putative class members here, it does not "fit the facts of the case." *Owens*, 895 F.3d at 973. Expert opinions based on "a uniform set of assumptions" as to "hypothetical residents" are inadmissible because they fail to describe the damages of the members of the putative class. *Gates*, 655 F.3d at 266. As the Third Circuit explained in its affirmance in *Gates*, proof of average circumstances is not "common proof":

> Plaintiffs cannot substitute evidence of exposure of actual class members with evidence of hypothetical, composite persons in order to gain class certification .... The evidence here is not 'common' because it is not shared by all (possibly even most) individuals in the class. Averages or community-wide estimations would not be probative of any individual's claim because any one class member may have an exposure level well above or below the average.

Id. at 266 (citations omitted). Or, as the district court in *Gates* put it: "[A]n average is an average is an average ..., in essence, a convenient fiction made up of numbers that are higher and lower than the average." *Gates v. Rohm & Haas Co.*, 265 F.R.D. 208, 222 (E.D. Pa. 2010). If an expert "cannot demonstrate [the alleged] impact for individual class members," it is an "insurmountable *Daubert* fit problem." *Pharmacy Benefit Managers*, 2017 WL 275398, at *20.

These problems plague Dr. Ducatman's approach. Ignoring data on the proposed class members' considerable individual differences, he recommends the same medical testing for the entire proposed class by assuming their "homogenous" exposure and risk. But just as he acknowledges that neither exposure nor risk are common within the proposed class (Ducatman Tr. at 56:5-61:12), [redacted] (Guzelian Rpt., at 10, 21.) [redacted] (*id.* at 945), [redacted] (*Id.* at 21, 95.) The U.S. Centers for Disease Control and Prevention (CDC) and Agency for Toxic Substances and Disease Registry (ATSDR) do not recommend medical monitoring of an asymptomatic population based only on their exposure to PFOA. (Ducatman Tr. Ex. 10 at 28; Ducatman Tr. at 107:11-110:10.)

[redacted]

envisioned by Dr. Ducatman." (Guzelian Rpt. at 96; *see also* Mandel Rpt. at 126 tbl. 11.) Instead, Dr. Ducatman's generalized opinions lead to an absurd mismatch with the actual Plaintiffs' claims. For example, Dr. Ducatman recommends monitoring pregnant women for pregnancy-induced hypertension, as well as special monitoring for those who are breastfeeding infants. (Ducatman Merits Rpt. at 21-22.) Yet, he was not aware that the only two female Plaintiffs seeking to represent the proposed class are in their mid-50s and 70s and, thus, past their child-bearing years. (Ducatman Tr. at 194:4-195:24.) But even if these Plaintiffs were of childbearing age, pregnant women are routinely screened for pregnancy-induced hypertension as a standard part of their prenatal care. (*Id.* 193:25-194:3.)

"One of the basic and most useful tools in diagnosis and treatment of disease is the patient's medical history," which is "widely recognized" to "involve[] the questioning and examination of the patient as well as appropriate medical testing" and examination of "written medical records." Reference Manual on Scientific Evidence ("RMSE") 670-71 (3d ed. 2011). Dr. Ducatman could have easily discovered these facts had he reviewed their medical records. Yet he failed to review any of their records or otherwise learn their medical histories (Ducatman Tr. at 37:8-20, 45:8-46:3), which significantly affect his medical monitoring opinion. Thus, he does not know that as part of their routine healthcare, the named Plaintiffs have received an array of medical tests, many of which he recommends as part of his medical monitoring program. (*Id.* at 169:7-12, 173:4-8, 175:24-176:2, 179:5-8, 181:9-12, 189:9-13, 193:20-24; Guzelian Rpt. at 97-119; Mandel Rpt. at 126 tbl. 11.)

Instead, he has "imaginary conversations" with imaginary physicians "in his mind":

> All I've done with that is I put everything in my mind. Here's the conversation in my mind. Here's where I think, you know, reasonable doctors will sit down and agree that were doing more good than harm. And I think it would be really good to have that conversation.

(Ducatman Tr. at 133:23-134:11; *see id.* at 133:2-20; 166:7-16; 173:22-174:4.) Imaginary conversations with imaginary physicians are no better than hypothetical plaintiffs and render Dr. Ducatman's opinion irrelevant to the facts of this case. *Owens*, 895 F.3d at 973.

These speculative recommendations are inconsistent with the ATSDR's actual advice to physicians against monitoring asymptomatic individuals solely due to PFOA exposure. (Ducatman Tr. Ex. 10 at 28; Ducatman Tr. at 107:11-110:10.) Nor does he show that it follows from any regulatory or advisory body's advice to conduct such screening. In contrast to this advice, Dr. Ducatman recommends medical monitoring without critical evaluation of whether the proposed components would detect the selected health outcomes early and improve treatment outcomes. [redacted] (Guzelian Rpt. at 31-33.) [redacted] (*Id.* at 54-57.)

Dr. Ducatman's opinion does not meet those requirements. As just one example, while shorter breastfeeding duration is an outcome he includes in his "medical monitoring" opinion (Ducatman Merits Rpt. at 22), the only thing that he proposes is to "ask questions" about it. (Ducatman Tr. at 160:12-19.) [redacted] (Guzelian Rpt. at 92.) [redacted] (*Id.* at 93.) [redacted] (*See id.* at 34-38.) Due to these failures, his opinion does not show that medical monitoring would appreciably benefit the putative class.

Moreover, by ignoring individual variation in proposing medical monitoring, Dr. Ducatman runs a significant risk of actually harming the putative class. Medical monitoring is not an unalloyed good. A test or treatment, like any medical intervention, comes with risks. The U.S. Preventive Services Task Force has long cautioned as to the risks of medical screening. (Ducatman Tr. Ex. 11 at 43; Ducatman Tr. at 145:14-147:6.) [redacted] (Guzelian Rpt. at 29.) A false-negative result—or the failure to correctly identify an abnormality—can lead to a delay in diagnosis and treatment. (Ducatman Tr. at 141:14-142:1.) By contrast, a false-positive result—or the false detection of an abnormality, *i.e.*, a "false alarm"—leads to unnecessary follow-up testing or treatment that can be invasive, uncomfortable, expensive, and potentially harmful. (*Id.* at 138:22-139:5, 141:10-13.) The psychosocial effects of false-positive results also include anxiety and labeling a healthy patient as ill. (*Id.* at 139:6-13, 143:21-144:5.) Monitoring can also lead to overdiagnosis, that is, the identification of conditions that, even if untreated, would never cause symptoms or reduce survival. (*Id.* at 137:20-138:5.)

Dr. Ducatman acknowledges these concerns, but only in the abstract. He states that physicians "are trained from the first day of med school [to] above all do no harm." (*Id.* at 127:23-25.) He agrees that medical monitoring should be performed only after weighing its potential benefits and harms. (*Id.* at 123:18-22.) And he says this process should weigh impacts to a patient's physical and mental health. (*Id.* at 127:13-17.) Yet he purports to perform his assessment in a vacuum. He offers a blanket pronouncement that his proposed program "will result in substantial benefits to not only participating class members, but the Bennington community as a whole." (Ducatman Reb. Rpt. at 22.) He fails to evaluate its impact on the real individuals who comprise the putative exposure class.

Dr. Ducatman's opinions simply do not account for the risks of medical monitoring. His Class and Merits reports do not even mention the risks of false-positives, false-negatives, and overdiagnosis. (Ducatman Tr. at 156:9-16.) The inherent risk that a test will generate a false result is reflected in its specificity and sensitivity. [redacted] (Guzelian Rpt. at 10-11.) [redacted] (*Id.* at 40.) [redacted] (*Id.* at 11; *see also* Mandel Rpt. at 7; Schwartz Reb. Rpt. at 11-14.) Remarkably, Dr. Ducatman did not consider these factors because he "didn't think it helped with anything regarding the outcome that [he] came to at the end of the report." (Ducatman Tr. at 156:9-16.) He does not even mention those words in reaching his opinions. (*Id.*)

Dr. Ducatman's medical monitoring opinions are wholly untethered from real world conditions and the facts of this case. Ignoring the individualized facts that he admits are relevant to medical monitoring, he relies instead on assumptions about a fictional group of homogenous Bennington residents that do not exist in reality. Disconnected from the population at issue and the individual variabilities that he admits permeate the putative class, Dr. Ducatman's generalized opinion cannot support class certification. Instead, it shows "the litany of individualized issues that pervade Plaintiffs' requests for medical monitoring" and make certification untenable. *Rowe*, 2008 WL 5412912, at *21.

B. Plaintiffs' Experts Do Not Purport to Offer a Common Method to Determine Presence, Amount, or Source of PFOA at Any Property

Plaintiffs' expert testimony on the fate and transport of PFOA in the proposed class area is inadmissible in support of class certification for lack of fit. Plaintiffs' three experts in this field—

Dr. Hopke, Mr. Yoder, and Dr. Siegel—do not even purport to offer a method to determine the presence, amount, or source of PFOA at any given location, or at any given time. [redacted] And Dr. Siegel purports to calculate the hydrogeological spread of PFOA based on two hypothetical square meter samples, but admits he could not determine the amount or source of PFOA at any specific location.

The opinions offered by Plaintiffs' fate and transport experts are of no use for class certification because none can answer the critical questions for the members of the putative class: whether there is PFOA at the property of any putative class member, how much PFOA is there, how long it has been there or may remain there, and whether any PFOA is attributable to Chemfab facilities or to other sources. Thus, none of these experts purport to offer the common proof that is essential to class certification, and their testimony cannot be admitted for that purpose.

1. Plaintiffs' Experts Have No Common Proof of PFOA at Any Property

Plaintiffs proffer the emissions and air deposition opinions of Dr. Hopke and Mr. Yoder as an attempt to "present common proof" of PFOA on "the class members' properties." (Dkt. 107-1 at 20.) [redacted] Mr. Yoder admits that his model "wasn't designed to tell us how much PFOA was deposited on property owned by a particular individual at a particular time." (Yoder Tr. at 160:16-162:22.) Mr. Yoder did not even "attempt to determine when over time PFOA may or may not have actually [been] deposited [onto] any given ... property in Bennington." (*Id.* at 163:5-10.) As such, he

readily agrees that his approach "does not offer a model of cumulative [air] deposition impacts for the period of operation for the Water Street facility." (*Id.* at 100:16-19.) Instead, he explains that all he set out to do was model the admittedly arbitrary emission rates based on Dr. Hopke's work:

> Q. And what were you trying to figure out as far as actual emissions in your report?
> A. I wasn't trying to figure out anything in actual emissions. ***I was just modeling the emission rates***.

(*Id.* at 109:14-18 (emphasis added).) All this allows him to determine is "an annual averaged deposition based on the facility input as it was constructed." (*Id.* at 100:20-101:2.)

The averaging approach taken by Mr. Yoder presents an "insurmountable *Daubert* fit problem." *Pharmacy Benefit Managers*, 2017 WL 275398, at *20. Class "certification is inappropriate" based upon such "an averaging technique." *Gates*, 265 F.R.D. at 222 n.25. Averaging "is, in essence, a convenient fiction made up of numbers that are higher and lower than the average; it does not reflect whether ***every*** putative class member was exposed to [a substance] at a level above background." *Id.* (emphasis in original). Mr. Yoder's model is such a convenient fiction. It is not based on actual emissions, and it does not compute actual air deposition at properties, which Mr. Yoder admits is "likely going to be different" throughout the proposed class area. (Yoder Tr. at 160:16-162:22.) Mr. Yoder's model does not offer common proof and does not support class certification.

The same is true of Dr. Siegel's "solute transport model," which he says is a back-of-the-envelope approximation (Siegel Tr. at 100:22-24) that only estimates PFOA transport in two hypothetical one-square meter areas, and nowhere else. Dr. Siegel uses this approach to approximate the movement of PFOA through the soil and bedrock down to the water table. These two square-meters are "conceptual." (*Id.* at 57:11-14.) They do not exist in any actual place in the Bennington area. (*Id.* at 105:4-8.) Thus, his approach admittedly cannot "predict the level of

PFOA in any specific well at any specific location" (Siegel Reb. Rpt. at 2-5) or the time it might take for PFOA to dissipate at any particular property. (*Id.* at 2-13.) As Dr. Siegel states, the "intent of [his] model was ***not to evaluate individual homes or even the variability in that context***," "of which we know there is variability across the site." (Siegel Tr. at 115:2-15 (emphasis added).) Indeed, he agrees with Saint-Gobain's experts that the "timing of PFOA to initially pass through soils and reach the water table inherently will be variable across … Bennington and North Bennington." (Siegel Merits Reb. Rpt. at 2-1.)

Dr. Siegel can only hypothesize about the level of PFOA in these two conceptual plots of land that, according to him, contain "generically the kind of [soil and bedrock] conditions you find within those areas." (Siegel Tr. at 33:10-18.) He simply assumes they are "representative." (*Id.* at 33:16-18.) Without accounting for the substantial variability that he admits exists in the soil and bedrock within the class area, this approach does "not bear a close relationship to the way [the] substance would be dispersed." *In re TMI Litig. Cases Consolidated II*, 911 F. Supp. 775, 798 (M.D. Pa. 1996), *aff'd*, 193 F.3d 613, 670 (3d Cir. 1999).

Throughout the class area, there are dozens of different types of soils, bedrock, and surficial materials between the soil and bedrock. (Siegel Tr. at 40:12-42:9, 47:8-48:16, 93:12-94:2.) Each has different physical and chemical properties that change how quickly PFOA may travel through it and leave the area. Different types of bedrock have different levels of porosity and permeability. (*Id.* at 93:22-94:2, Ex. H at 67.) Different types of soil have different densities and chemical properties that can trap or release PFOA. (Siegel Tr. at 47:1-48:16; Ex. F at 309-12; Ex. K at 64-65.) Further, the distance from the surface to wells can vary substantially, and thus the distance PFOA would have to travel to reach groundwater varies across the class area. (Siegel Class Rpt.

at 2-4, 5.) This hypothetical calculation is not "relevant to the task at hand," *Daubert*, 509 U.S. at 597, and cannot determine the presence of PFOA at properties on a class-wide basis.

The same lack of fit characterizes Dr. Siegel's calculations of PFOA dissipation from the class area. Once again, he relies on the two hypothetical one-square-meter areas to estimate the time it will take for PFOA to be flushed from these areas. (Siegel Tr. at 97:19-98:1, 104:3-6.) But two hypothetical findings are of no use when Dr. Siegel admits that the manner in which different wells react to recharge varies across the class area:

> [S]ome wells have about the same concentrations of PFOA in their water from one sample to the next, some wells have concentrations that decrease, some have concentrations that go up and down by small amounts, and some increase or decrease by an order of magnitude or more.

(Siegel Reb. Rpt. at 2-13.) Dr. Siegel does not account for these changing PFOA concentrations from one sample to the next and from one well to the next over time. His methods do not fit class certification.

2. Plaintiffs' Experts Have No Common Proof of Source of PFOA

Nor do Plaintiffs' experts offer any method to determine on a class-wide basis whether and how much PFOA at any given location is attributable to the Chemfab facilities. [redacted] (Hopke Class Rpt. at 2-4.) Mr. Yoder, on the other hand, "assumes as truth the very issue [he] needs to prove." *Clark v. Takata Corp.*, 192 F.3d 750, 757 (7th Cir. 1999). He begins "with the conclusion that all the PFOA depositions came from Chemfab" and does "not look at any individual property in Bennington as a receptor and then work backwards to determine the source of any PFOA depositions at that property." (Yoder Tr. at 171:19-172:8.) And although Dr. Siegel seeks to opine that all PFOA in the class

area came from Chemfab facilities, he is unable to state where the PFOA at any given property in the proposed class area came from. (Siegel Tr. at 155:5-12.)

This omission of any consideration of sources is particularly notable given Dr. Hopke's academic qualifications to evaluate such questions. Outside the courtroom, he is "one of the fathers of source apportionment," a mathematical technique used to determine how much of an observed concentration of a chemical compound can be attributed to each of multiple sources in a region. (Hopke Tr. at 229:5-8.) Thus, when Dr. Hopke opines that Chemfab was the only source of PFOA in the Bennington area, he could have tested his opinion by performing a source-apportionment analysis that considered other potential sources. (*Id.* at 233:2-13.) Yet he did not, offering only the explanation that he "had more than enough other things to do." (*Id.*) The number of Dr. Hopke's other tasks is not a scientific justification for his refusal to apply a control he pioneered to his untested theory that 100% of PFOA is attributable to Chemfab. His failure to "employ[] in the courtroom the same level of intellectual rigor that characterizes" his work in source apportionment renders his opinion unreliable and inadmissible. *Kumho*, 526 U.S. at 152.

C. Mr. Unsworth Has No Common Proof of Damages for the Property Class

Plaintiffs seek three categories of damages on behalf of the putative property class: (1) diminution in value; (2) added cost groundwater damages; and (3) replacement cost groundwater damages. As to the first, Mr. Unsworth denies that he even attempted class-wide proof of diminution in value, which he admitted would be "difficult" due to the heterogeneity of the class area and other factors. (Unsworth Reb. Tr. at 194:13-196:6, 199:13-200:13.) As to the second, Mr. Unsworth only purports to calculate added cost damage of "average" plaintiffs—not the damages of any class member. (Unsworth Class Rpt. at 8-10.) And as to the third, Mr. Unsworth opines on unrelated infrastructure projects for the "public," rather than the damages of the putative class or its members. (Unsworth Reb. Tr. at 173:9-19.) Because he does not even purport to

provide a common method to determine the damages of the members of the proposed property class, his testimony does not fit class certification.

1. Mr. Unsworth Offers No Common Proof of Diminution in Value

Mr. Unsworth does not show common proof in support of certification of a theory of diminished property value. He denies that Plaintiffs are even "seeking class certification for purposes of establishing monetary damages associated with property value diminution." (Unsworth Prop. Reb. Rpt. at 1-2.)[3] It is his understanding that there was no "aspect of plaintiffs' property claims to which … they are seeking class certification." (Unsworth Reb. Tr. at 185:8-15.) He "would consider this to be a heterogeneous area," with variation as to numerous factors, including "[l]ot size," "[a]ge of home," "[d]istance to town center," and so many others he "could go on all afternoon." (*Id.* at 194:17-196:5.) Mr. Unsworth admits he was "not proposing a methodology to get at individual home losses" and that "***it would be difficult***, given the ongoing dynamic situation there, to do a formal econometric hedonic model in the community." (*Id.* at 199:13-200:13 (emphasis added).) He did not attempt a regression analysis of property values in the class area because of this difficulty:

Q. But you haven't attempted to develop a model that would allow that multiple regression here, have you?
A. ***No.***
Q. In fact, you've indicated that the timing and the current volume of sales would make it difficult to do that model?
A. ***In all likelihood, yes.***
Q. And at this time, you don't know whether it is feasible to do that kind of a model, do you?
A. ***I don't.***

(*Id.* at 276:13-24 (emphasis added).)

[3] Although this statement in Mr. Unsworth's report would ordinarily be dispositive of certification of such claims, Plaintiffs have been unwilling to stipulate to it in a pleading, necessitating this motion to exclude Mr. Unsworth's testimony in support of any such theory.

[redacted] (Jackson Rpt. at 1.) [redacted] (*Id.*) [redacted] (*id.* at 5-6), [redacted] (*id.* at 12), [redacted] (*Id.* at 15-16); *see also Parko v. Shell Oil Co.*, 739 F.3d 1083, 1086 (7th Cir. 2014); *Ebert v. Gen. Mills, Inc.*, 823 F.3d 472, 479 (8th Cir. 2016); *Gates*, 655 F.3d at 271. Mr. Unsworth does not and cannot proffer class-wide proof of diminution in property value.

2. Mr. Unsworth's "Added Cost" Opinion Cannot Determine Purported Groundwater Damages of Any Putative Class Member

Mr. Unsworth's "added cost" model of groundwater damages does not proffer any common proof. Instead, his opinion concerns damages only for a set of hypothetical, average residents residing in Bennington and North Bennington. As such, it is not "relevant to the task at hand," *Daubert*, 509 U.S. at 597, and does not "fit" as a tool to assist the Court in determining whether groundwater damages are subject to common proof on a class-wide basis.

Mr. Unsworth derives his "added cost" opinion based on a "but-for" model of damages—that is, a comparison between the purported costs of putative class members when they are connected to municipal water and the purported costs they would incur using private well water

"but for" PFOA. (Unsworth Class Rpt. at 8.) Yet he did not request, much less "look at," "individual plaintiff data" relating to the costs of the named Plaintiffs, to say nothing of the absent putative class members. (Unsworth Tr. at 172:17-23.) Instead, Mr. Unsworth models this but-for condition using assumptions regarding the "average" annualized costs of several factors associated with owning and operating a groundwater well. (Unsworth Merits Rpt. at 11.)[4]

Mr. Unsworth rejects the notion that individual data matters, opining that the availability of more information concerning individual variation would not affect his opinion. (Unsworth Tr. at 77:1-78:1.) Rather, he demonstrates his belief that the omission of variability was not a glitch, but a feature, of his model. In his words, "I am trying to measure damages to the class, and I use averages for various factors to predict the damages for the class. On average, it will be correct." (*Id.* at 167:24-168:2; *see also id.* at 166:11-14, 167:14-15, 201:20-22.)

Mr. Unsworth's use of averages, rather than actual data on putative class members leads to a fatal disconnect between his opinion on total class damages and the damages attributable to individual class members. In a putative class action such as this one, "the aggregate damage amount" is not the damages of a class entity (which does not exist), but rather "the sum of damages suffered by a number of individuals." *Asacol*, 907 F.3d at 55. In such circumstances, damages for the members of the putative class cannot be determined by calculating the damages of an "average" class member. "[A]n average multiplied by the total number of individuals" may describe the total damages of the class, but it cannot support "the demonstrably wrong conclusion" that every class member was injured at an average level. *Id.* at 54. The "shortcut" of "abstract" "'averages'" instead of "individual damages" is "a caution signal ... that class-wide proof of damages [i]s

[4] Those factors include (1) electrical costs; (2) well pump replacement; (3) pressure tank replacement; (4) water tests for bacteriological contamination; (5) water softening operation and equipment replacement; and (6) insurance adjustment. (Unsworth Merits Rpt. at 12.)

impermissible." *Broussard*, 155 F.3d at 343. Thus, courts reject purported class-wide proof based upon an average or representative analysis. *Opperman v. Path, Inc.*, 2016 WL 3844326, at *14 (N.D. Cal. 2016); *In re Fluidmaster, Inc., Water Connector Components Prod. Liab. Litig.*, 2017 WL 1196990, at *58 (N.D. Ill. 2017).

Mr. Unsworth's approach, based on "a uniform set of assumptions" as to "hypothetical residents," thus fails to describe the damages of the members of the putative class. *Gates*, 655 F.3d at 266. Information on class-wide averages is not "'common' because it is not shared by all (possibly even most) individuals in the class." *Id.* "Averages or community-wide estimations would not be probative of any individual's claim because any one class member may have an exposure level well above or below the average." *Id.* [redacted] (Mullin Rpt. at 28.)

The flaw in using average values is apparent from Mr. Unsworth's acknowledgement that, even under his analysis, some variables affect whether class members even have damages at all. For example, he concedes that proposed class members in Bennington who used water softeners "may experience a ***financial cost savings***" by switching to municipal water. (Unsworth Reb. Tr. at 50:14-51:1 (emphasis added).) But apart from this single variable of water softener use, he does not consider any data as to other variations in the class relevant to his analysis. Instead, without having reviewed any data that the named representatives provided, he questions its reliability:

Q. In formulating your opinion in this case, did you review any of the data from any of the named plaintiffs in this case?
A. I don't think we did look at the individuals, no .... I did not look at the individual plaintiff data ....
Q. ... Why didn't you look at their data on how they used their wells and what their expenses are?

> A. ... [F]rankly, from an economic perspective, interviewing class members about those factors, ***I don't know whether that information is reliable, given that they're members of the class***.

(Unsworth Tr. at 172:17-23, 173:24-174:9 (emphasis added).) Mr. Unsworth's failure to consider the numerous variations among proposed class members on a variety of issues that affect damages is fatal to the use of his opinion to show damages of those individuals.

Mr. Unsworth suggests that, in lieu of considering individual issues, "we can calculate a total damage based on common factors," and then later "allocate those damages fairly based on either formulaic approach or some other approach." (Unsworth Reb. Tr. at 74:8-75:1.) Yet this evasion simply pushes the individualized issues to the allocation stage of proceedings. For example, he admits that the allocation stage may require considering "the actual water bills of the putative class members," rather than averages. (*Id.* at 79:23-80:1.) [redacted] (Mullin Rpt. at 25.) Many more individuals would likely prove to be uninjured under a proper accounting for the variation within the costs of proposed class members. [redacted] (*Id.* at 40.) Beyond the fact that his proposed allocation procedure would violate the Rules Enabling Act,[5] it cannot describe any individual putative class member's actual damages and, thus, cannot show injury or damages

[5] As to any undercompensated individuals, Mr. Unsworth opines that "presumably they'd opt out of the class." (Unsworth Tr. at 134:17-20.) That assertion is also erroneous as a matter of law. The Rules Enabling Act prohibits fluid recovery that would allow class-action opt-out procedures to "abridge, enlarge or modify any substantive right" of Saint-Gobain and force it to pay a damages amount that included plaintiffs who had opted out. *See* 28 U.S.C. § 2072(b); *see also McLaughlin v. Am. Tobacco Co.*, 522 F.3d 215, 231-32 (2d Cir. 2008), *abrogated on other grounds by Bridge v. Phx. Bond & Indem. Co.*, 553 U.S. 639 (2008).

by generalized proof. *See In re Rail Freight Fuel Surcharge Antitrust Litig.-MDL No. 1869*, 725 F.3d 244, 252-53 (D.C. Cir. 2013); *Asacol*, 907 F.3d at 54-55.

3. Mr. Unsworth's "Replacement Cost" Opinion Does Not Describe Damages of the Putative Class Members

Mr. Unsworth's "replacement cost" approach does not fit class certification because it addresses the purported damages of the public, not the members of the putative class. His replacement cost approach identifies and recommends three infrastructure projects relating to the Town of Bennington's water system, valued at a total of over $12.4 million. (Unsworth Merits Rpt. at 16-17.)[6] He says these projects are needed "to replace the full-range of services provided by this resource in order to return ***the community*** to the conditions that would have existed absent the contamination event." (*Id.* at 15 (emphasis added).)

At the outset, this does not describe damages at all. Mr. Unsworth admits that the issues to be addressed by the proposed projects all pre-dated the detection of PFOA. (Unsworth Tr. at 243:15-244:15, 246:8-16, Ex. 18 at 1.) In fact, those projects were described by the Town not with any connection to PFOA, but as a "wish/planning list." (Unsworth Tr., Ex. 18 at 1.) Because the purported need for these projects pre-dated the discovery of PFOA, they cannot constitute damages of the class members, and his opinion advocating for them does not fit class certification.

In addition, Mr. Unsworth acknowledged that his replacement cost opinion does not relate to the putative class. He proposes to award replacement cost damages not to the putative class members, but to the Town of Bennington, a non-party. (Unsworth Reb. Tr. at 171:1-22.) To this end, he admits that his opinion on the added costs of the putative class and his opinion on the

[6] Although Mr. Unsworth suggests that North Bennington's water system may require treatment plant upgrades to ensure system capacity, he excluded any damage calculations for North Bennington from his "replacement cost" approach because North Bennington representatives "expressed the opinion that there is no need for expansions or changes to their systems to meet the expected future demands imposed by additional users." (Unsworth Merits Rpt. at 18.)

replacement cost of groundwater concern "two different groups of people." (*Id.* at 172:9-173:8.) By proposing upgrades to municipal infrastructure, his replacement cost opinion purportedly concerns "[t]he damages that ***the public*** has suffered … of which the members of the class" are a subset. (*Id.* at 173:9-19 (emphasis added).) Because the Town is neither a Plaintiff in this action nor a member of the putative class, the Court lacks either the jurisdiction to compel the Town to execute Mr. Unsworth's proposed projects or the authority to so alter the substantive rights of the parties under the Rules Enabling Act. *McLaughlin*, 522 F.3d at 232.

Mr. Unsworth's "replacement cost" opinion thus has no bearing on the damages of the members of the putative class. Damages must "accurately reflect the number of plaintiffs actually injured by defendants" in the class context just as in individual litigation. *Id.* at 231. Damages in a class action do not belong to the class as an entity, but are "the sum of damages suffered by a number of individuals." *Asacol*, 907 F.3d at 55. Mr. Unsworth's proposed award to the Town for the benefit of the public does not even address any purported harm to individuals who are members of the proposed class.

Even if certain class members who are municipal water customers were counted as indirect beneficiaries of the proposed relief awarded to the Town, the problem remains. [redacted] (Mullin Rpt. at 47.) Moreover, the putative class members are powerless to implement the projects alone without action by the non-party Town of Bennington. (Unsworth Tr. at 240:23-241:18.) Thus, these projects are not damages because their implementation would "depend[] on the unfettered choices made by independent actors not before the courts and whose exercise of broad and legitimate discretion the courts cannot presume either to control or to predict." *ASARCO Inc. v. Kadish*, 490 U.S. 605, 615 (1989).

II. PLAINTIFFS' EXPERTS' CLASS OPINIONS ARE UNRELIABLE

In addition to their lack of fit with class certification, the opinions of Plaintiffs' class certification experts cannot reliably support the elements of Rule 23:

A. Dr. Ducatman's failure to consider the "considerable individual differences" among the putative class members makes it impossible for his opinion to reliably sustain any class-wide proof of medical monitoring.

B. Not only are Plaintiffs' fate and transport experts incapable of addressing by common proof whether there is PFOA attributable to Chemfab facilities at any property within the class area, but the opinions that they developed in support of class certification are arbitrary, litigation-driven, and unvalidated and thus unreliable.

C. Mr. Unsworth's "added cost" damages opinion is unreliable because it does not account for material variation throughout the putative class as to nearly all of the critical parameters of his model.

A. Dr. Ducatman's Class-Wide Medical Monitoring Opinion Is Unreliable

Dr. Ducatman's opinion in support of class certification is unreliable for the same reasons that it lacks fit. Dr. Ducatman acknowledges an array of "considerable individual differences" relative to the purported need for medical monitoring, yet fails to consider any of those differences. (Ducatman Tr. at 55:25-61:6.) He acknowledges the need to consider risks of medical monitoring tests, but failed to consider any risks. (*Id.* at 137:20-144:5.) He proposes a variety of tests for Plaintiffs who already receive them or do not need them. (*Id.* at 169:7-12, 173:4-8, 175:24-176:3, 179:5-8, 181:9-12, 189:9-13, 193:20-24; Guzelian Rpt. at 97-119.) And he did not know of any of these errors because he did not look at any information related to the people he opines should be monitored. (Ducatman Tr. at 37:8-20, 45:8-46:3.) No interpretation of *Daubert* permits an expert to acknowledge a methodology and fail to apply it or to ignore the relevant data in favor of an assumption. *Barber v. United Airlines, Inc.*, 17 F. App'x 433, 437 (7th Cir. 2001). Dr. Ducatman's testimony is unreliable on multiple levels.

B. Plaintiffs' Experts' Fate and Transport Opinions Are Unreliable

1. Dr. Hopke's Opinion Is Unreliable

a. Dr. Hopke's Emissions Opinion Ignores Actual Emissions Data

[redacted] (Hopke Class Rpt. at 3-4.) This opinion is particularly flawed. It is undermined by the actual emissions data, which Dr. Hopke admitted he did not evaluate in a manner that would permit him to offer an expert opinion on the reliability of that data. (Hopke Tr. at 113:10-115:9.) He did not consider a publicly available industry-wide report that found "a significant amount of the APFO input to the glass cloth process decomposes," which Dr. Hopke "didn't know … existed." (Hopke Tr. at 109:1-10, 114:17-20; Ex. 15 at 49.) Moreover, a "material balance report" showed that a "significant portion (87%) of the APFO input to the process" was not detected in the tests—meaning that the APFO was destroyed in the process, not emitted to the air. (Hopke Tr. at 111:4-9; Hopke Tr., Ex. 14 at 7.) [redacted] (Hopke Tr. Ex. 14 at 7.) Dr. Hopke did not review the material balance report to form his opinions, even though the report was produced in this litigation. (Hopke Tr. at 103:25-105:15, 111:1-15.) It is well settled that expert testimony must be "based on what is known," *Daubert*, 509 U.S. at 590, and "cannot ignore the 'real world.'" *Edison Wetlands Ass'n, Inc. v. Akzo Nobel Chems. Inc.*, 2009 WL 5206280, at *6 (D.N.J. 2009) (citation omitted). Dr. Hopke's decision to ignore the available data is fatal to his opinion.

Dr. Hopke's opinion that all APFO converted to PFOA is also based on unfounded assumptions about the chemistry of the substances used at the Chemfab facilities that are contrary to the actual data. He opined that the amount of APFO that will convert to PFOA "is a function of the pH of the dispersant solution" (Hopke Class Rpt. at 3; Hopke Tr. at 68:3-5), which "would have to be below somewhere between 2 and 3" (an acidic solution) to convert all APFO to PFOA.

(Hopke Tr. at 61:1-10.) Yet in formulating his opinions, Dr. Hopke did not consider the pH of those solutions (*id.* at 55:1-22), [redacted] (*Id.* at 63:14-23; *see* Hopke Tr. Ex. 6.) These data show that his opinion that all APFO would convert to PFOA was thus unsustainable under his methodology. Because the actual data contradict the speculative assumptions of Dr. Hopke's opinion, it is inadmissible. *See In re Rezulin Prod. Liab. Litig.*, 369 F. Supp. 2d 398, 425 (S.D.N.Y. 2005); *M.B. ex rel. Scott v. CSX Transp., Inc.*, 130 F. Supp. 3d 654, 667-68 (N.D.N.Y. 2015). Admitting expert testimony based on such "speculative assumptions is an abuse of discretion." *Major League Baseball Props., Inc. v. Salvino, Inc.*, 542 F.3d 290, 311 (2d Cir. 2008).

Because the data refuted Dr. Hopke's opinion that 100% of the APFO in the fabric-coating process will convert to PFOA, he pivoted in his rebuttal report to a new theory that all PFOA will sublimate before it can be destroyed by the heat of the stacks. (Hopke Reb. Tr. at 35:8-12; 37:3-15.)[7] Initially, the fact that the "underpinnings" of his opinion "have changed in direct response" to being challenged shows that his methods are not based on science, but litigation, and therefore are inadmissible. *Haller v. AstraZeneca Pharms. LP*, 598 F. Supp. 2d 1271, 1296-97 (M.D. Fla. 2009). "Coming to a firm conclusion first and then doing research to support it is the antithesis of [the scientific] method." *Clarr v. Burlington*, 29 F.3d 499, 502-03 (9th Cir. 1994).

[7] Dr. Hopke claims that his sublimation theory is simply a restatement of his earlier theory, yet he admitted that he did not find academic support for this theory until a week before the first deposition. (Hopke Tr. at 232:10-13.) This was after he submitted his first report that did not contain the words "sublime" or "sublimation." Thus, Dr. Hopke appeared to devise his sublimation concept after the submission of his first report and then searched for papers to support this theory. When asked at the first deposition whether there were any papers that supported this theory, he was not able to provide them. Instead he inserted the articles in an errata form over a month later. (*Id.* at 75:25-76:4, 232:10-13; Hopke Errata.)

In any event, this new, untested sublimation hypothesis is as flawed as the first. In opining on this new chemical process, Dr. Hopke did not even attempt to determine the rates of sublimation and decomposition:

> Q. Have you calculated that rate of sublimation for PFOA or APFO?
> A. ***No.*** I relied on Barton 2009.
> Q. Have you calculated it at any given temperature?
> A. ***No, I have not.***
> ...
> Q. How—how quickly would [PFOA] sublime? What would the rate be, Dr. Hopke?
> A. ***We don't know. I don't know.*** Again, it depends on the crystal size and other conditions.

(Hopke Reb. Tr. at 54:21-55:10 (emphasis added).) Without awareness of the various temperatures and residence times of the fabric in each of the different heating zones, Dr. Hopke is unable to determine whether APFO would be thermally destroyed as opposed to sublimating. (*Id.* at 55:4-19; 158:10-17.)[8] That "untested hypothesis ... falls into the category of unreliable speculation that is inadmissible under *Daubert*." *In re Mirena IUD Prods. Liab. Litig.*, 169 F. Supp. 3d 396, 450-51 (S.D.N.Y. 2016) (quotations and citation omitted).

Dr. Hopke's sublimation hypothesis is held together only by cherry-picking and misapplication of the scientific literature. [redacted] (*See* Hopke Class Rpt. at 4; Chinkin Reb. Rpt. at 11; Hopke Reb. Rpt. at 2; *see also* Hopke Reb. Tr., Ex. 6.) Dr. Hopke says that APFO, unlike PFOA, will not thermally decompose (Hopke Reb. Rpt. at 2), but he ignores that one of the authors he relies on reported that APFO also decomposes—and much more quickly than PFOA. (*See*

[8] Dr. Hopke used an erroneous formula for vapor pressure of APFO (Hopke Reb. Tr. at 97:25, 98:8), which he admits caused an error by a factor of more than 1,000, an error he initially could not imagine would be "anywhere near that big." (Hopke Reb. Tr. at 105:2-15, 109:6-110:21.)

Krusic et al. (2005); Krusic and Roe (2004) at 3800.) [redacted] (Chinkin Reb. Rpt. at 11; Hopke Reb. Tr. at 50:18-51:7.)[9] So he relies on Barton (2009) in an attempt to extend Zhu's mechanism from ammonium chloride to APFO, but he admits Barton's conclusion is a mere untested hypothesis. (Hopke Reb. Tr. at 158:6-9; Ex. 5C at 754.)

Federal courts prohibit selective science, such as Dr. Hopke's reliance on selected conclusions of one article while ignoring and rejecting related conclusions by the same author in another article. *In re Zoloft (Sertraline Hydrochloride) Prod. Liab. Litig.*, 858 F.3d 787, 797 (3d Cir. 2017). Nor will they tolerate the reliance on scientific literature to draw conclusions that the authors themselves were unwilling to reach. *Huss v. Gayden*, 571 F.3d 442, 459 (5th Cir. 2009); *Happel v. Wal-Mart Stores, Inc.*, 602 F.3d 820, 826 (7th Cir. 2010); *McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233, 1247 (11th Cir. 2005). These flaws, together with the "sheer number of mistakes" contained in Dr. Hopke's opinions, demonstrate that his opinions derive from unreliable methods. *See EEOC v. Freeman*, 778 F.3d 463, 467 (4th Cir. 2015). The many admitted errors, some of which are outlined above, "add to the cumulative effect of the methodological errors" contained in his opinions, and warrant exclusion. *See Malletier v. Dooney & Bourke, Inc.*, 525 F. Supp. 2d 558, 630 (S.D.N.Y. 2007).

b. Dr. Hopke's Hypothetical Emissions Scenarios Are Unreliable

[redacted]

[9] Asked whether another compound, ammonium perfluorobutanoate, "would be a good analog for ammonium perfluorooctanoate," Dr. Hopke said, "Not—not sure. A smaller chain may have somewhat different properties." (Hopke Reb. Tr. at 43:4-7.) Asked whether ammonium perfluorobutanoate would be a better analog than ammonium chloride for APFO, he admitted that he did not know without looking further. (*Id.* at 43:8-14); *see also Joiner*, 522 U.S. at 146.

[redacted] (Hopke Class Rpt. at 4.) But as set forth above, he did not consider actual emissions and other data relating to the facilities in developing any of these estimates. Moreover, the only one of these scenarios for which he offered a purported methodology based on chemistry—his upper-bound estimate—is based on speculative and incorrect assumptions that are flatly contradicted by the available data.

As a result, it is impossible for him to say which estimate better represents actual emissions. He cannot articulate any methodology—let alone a reliable one—to determine whether it is "more likely" that the actual emissions rate falls closer to [redacted]

> Q. So can you say with any reasonable degree of scientific certainty where in between the 1,000 and 10,000 pound per year estimate actual emissions would fall?
> A. ***Not with any scientific certainty.*** I mean, I think we can say they're certainly in the 1,000 to 10,000 and likely more at the high end than the low end.
> Q. So what's your methodology, if you want to test that and try to replicate it, for saying that it's more likely to fall at the high end as compared to the low end? Have you calculated the probability in your view or possibility in your view of where those estimates fall compared to what you think actual emissions are between 1 and 10,000?
> A. ***I don't see any way to do that.***

(Hopke Tr. at 137:10-24 (emphasis added).) Rather than being based on actual emissions data, which were available to Dr. Hopke, these scenarios are arbitrary, based on speculative assumptions, and overestimated.

Upper-Bound: Dr. Hopke's upper-bound estimate of [redacted] is unreliable at every step. *Cf. Amorgianos*, 303 F.3d at 267. Dr. Hopke admits the estimate was "probably overestimated," Mr. Yoder believes it is "arbitrary," and Dr. Siegel says that PFOA levels observed in groundwater are not consistent with it. (Hopke Tr. at 180:1-5; Yoder Tr. at 76:12-24, 102:12-103:8; Siegel Tr. at 107:5-16.)

[redacted]

(Hopke Tr. 170:8-14.) [redacted] (Chinkin Rpt. at 30.)

[redacted] (Hopke Class Rpt. at 4.) This assumption is contrary to actual data, as set forth in Section II.B.1.a above. [redacted] (*Id.*) As noted above, this assumption is contrary to actual emissions data and is unreliable.

Dr. Hopke then assumes APFO concentrations in the dispersions at the high end of a range reported in Material Safety Data Sheets, even though Dr. Hopke admitted that he had no data to support this assumption. (Hopke Reb. Tr. 138:24-140:15.) [redacted] (Hopke Class Rpt. at 4.) [redacted] (*Id.*)

Mid-Range: Dr. Hopke's "mid-range" estimate of [redacted] is also based on unsupported assumptions. [redacted] (Yoder Class Rpt. at 4), [redacted]

[10] Dr. Hopke could not make up his mind on whether emitted APFO came from solution. At his first deposition, he agreed that "the APFO [was] in the solution." (Hopke Tr. at 73:1-5; *see* Hopke Class. Rpt. at 3.) But at his second deposition, he said that if he ever "did indicate that [the formation of PFOA] was coming from solution," he no longer agreed with that. (Hopke Reb. Tr. at 22:3-6.)

[redacted] (*Id.*)[11] [redacted]

[redacted] (*Id.* at 4-5.)

But Dr. Hopke does not have any scientific basis to opine that any of the "fluorinated hydrocarbons" detected in this single reported test was PFOA (Hopke Tr. at 185:4-187:5), and neither does Mr. Yoder. (Yoder Tr. at 83:3-21.) According to Dr. Hopke, this test provided "such partial data that it really wasn't going to give us a comprehensive view of what the emissions were from this plant." (Hopke Tr. at 186:2-7.) Dr. Hopke concedes that "[t]hey did not do a detailed mass spectrum analysis that would enable them to determine the specific compound." (*Id.* at 188:15-20.) Dr. Hopke never even spoke to DEC about its conversation with the unidentified former Chemfab engineer (*id.* at 189:12-22), and Mr. Yoder learned nothing about these methods when he spoke to DEC:

Q. How did this engineer perform his rough estimate of PFOA emissions?
A. ***I have no idea.***
Q. Did you ask [DEC] that?
A. ***I did not.***
Q. Why did this engineer perform a rough estimate of PFOA emissions?
A. ***I do not know.***
Q. Did you do anything to independently verify the information [DEC] provided to you is accurate?
A. ***I did not.***

(Yoder Tr. at 91:9-20 (emphasis added).)

Thus, Dr. Hopke has no basis to believe that the [redacted] mid-range estimate is reasonable. Rather, his opinion is "based on speculative assumptions" about untested and untestable hearsay. *See Major League Baseball*, 542 F.3d at 311. And even more fundamentally, the fact that he

[11] [redacted] (Yoder Class Rpt. at 4.)

estimates a mid-range for PFOA emissions at all contradicts his core opinion: [redacted] (*See, e.g.*, Hopke Class Rpt. at 3-4.) In other words, Dr. Hopke tries to have it both ways—[redacted] He offers no consistent methodology to distinguish between his conflicting opinions. *See Major League Baseball*, 542 F.3d at 311. He offers no basis in chemistry for his mid-range estimate, which is unreliable.

Lower-Bound: Finally, Dr. Hopke also provides a "lower bound" emissions estimate for each former Saint-Gobain facility. (Hopke Class Rpt. at 4.) [redacted] (*Id.*) But Dr. Hopke stated at his deposition that, contrary to the opinions offered in his first report, 100 lbs is not (in his view) a reasonable estimate. (Hopke Tr. at 179:14-19.) Mr. Yoder seemed to concur, admitting that the lower bound estimate was "arbitrary." (Yoder Tr. at 76:12-24.) Unreasonable and arbitrary opinions must be excluded. *Major League Baseball*, 542 F.3d at 311.

2. Mr. Yoder's Opinion Is Based on Dr. Hopke's Arbitrary Estimates

Mr. Yoder's air modeling opinion is inadmissible because it is based on the unsubstantiated and arbitrary emission rates scenario put forth by Dr. Hopke. Mr. Yoder used these speculative estimates in his model without analysis or question, making his model unreliable and inadmissible. Thus, for the same reasons that Dr. Hopke's opinion is unreliable, so is Mr. Yoder's.

[redacted] (Yoder Class Rpt. at 1.) Yet the reliability of the AERMOD program is only as good as its inputs. (*See* Yoder Tr. at 69:17-22.) [redacted] (*see* Yoder Class Rpt. at T-2), [redacted]

(Yoder Tr. at 53:12-25.) Mr. Yoder relied on Dr. Hopke's emission estimates, which were based on scientifically unreliable methods, for the PFOA emissions input in his model. Mr. Yoder admits that these emission estimates were arbitrary. (Yoder Tr. at 102:12-103:8.)

The "[a]dmission of expert testimony based on speculative assumptions is an abuse of discretion." *Major League Baseball*, 542 F.3d at 311. Where an expert admits that a step in his analysis is taken with "arbitrary" guesswork, exclusion is required. *See Coffey v. Dowley Mfg., Inc.*, 89 F. App'x 927, 931-32 (6th Cir. 2003); *Mike's Train House, Inc. v. Lionel, L.L.C.*, 472 F.3d 398, 408 (6th Cir. 2006). Courts thus exclude expert testimony that "fails to offer the Court a reasoned analysis for why [a] figure is valid" and instead offers an opinion that is "arbitrary and blends into the realm of guesswork." *Ashland Hosp. Corp. v. Affiliated FM Ins. Co.*, 2013 WL 3213051, at *5 (E.D. Ky. 2013). Because the estimated emission rates used by Mr. Yoder are arbitrary as set forth above, his model based upon them should accordingly be excluded.

In addition, the Court should exclude Mr. Yoder's opinion that "PFOA was deposited from Chemfab's operations" as "the only historically significant source of atmospheric deposition PFOA in Bennington, VT." (Yoder Class Rpt. at 5-6; Yoder Reb. Rpt. at 5-6.) Mr. Yoder does not attempt to account for any other sources of PFOA in the Bennington area, despite acknowledging that other potential sources existed. (Yoder Tr. at 172:9-18; Chinkin Rpt. at 38.) Nor does he account for background levels of PFOA, despite acknowledging the importance of doing so in deposition modeling. (Yoder Tr. at 33:23-34:1; Chinkin Rpt. at 38.) In fact, as stated above, he disclaims the ability to determine the source of PFOA at any given property in the proposed class area. Air emission models are unreliable where an expert "fail[s] to consider other obvious explanations" for observed conditions. *Innis Arden Golf Club v. Pitney Bowes, Inc.*, 629 F. Supp. 2d 175, 190 (D. Conn. 2009). Because Mr. Yoder does not consider "why any alternative

explanations for the [alleged injury] should be ruled out," his opinion that Chemfab's operations were the sole source of PFOA is inadmissible. *Matosky v. Manning*, 428 F. App'x 293, 298 (5th Cir. 2011).

3. Dr. Siegel's Hydrogeological Opinion Is Unreliable

Just as Dr. Hopke ignores actual emissions data in favor of three hypothetical "scenarios," Dr. Siegel does not model the migration of PFOA in the actual class area, but rather only for two hypothetical areas that do not exist in the class area. *See supra* at Section I.B.1. Dr. Siegel failed to validate his opinion against actual geological data in the class area, which he admits would vary considerably. This fundamental flaw, along with many others, renders his opinion unreliable.

a. Dr. Siegel's Opinion Does Not Account for Any of the Individual Differences in the Class Area That He Acknowledges

Courts exclude environmental modeling opinions where they are based on "calculations in a vacuum without any attempt to validate [them] against reality." *Burst v. Shell Oil Co.*, 104 F. Supp. 3d 773, 781 (E.D. La. 2015). That is precisely what Dr. Siegel's approximation does here. He calculates the movement of PFOA through soil and bedrock to the water table by approximating the characteristics of two "conceptual" square-meter areas. (Siegel Tr. at 57:11-14.) He admits those areas do not actually exist in reality, but nevertheless assumes them to be "representative" of conditions in the class area. (*Id.* at 33:16-18.) Dr. Siegel did not test the validity of that core assumption. He did not take samples from any part of the class area to see whether this was so (*id.* at 33:7-18, 38:14-24), even though he has experience in taking soil samples (*id.* at 14:8-9), drilling, (*id.* at 15:6-7), and taking water samples. (*Id.* at 14:10-11.) Even where he does rely on soil samples for his calculations, he uses samples from the Iberian Peninsula and Belarus, not from the Bennington area. (*Id.* at 79:20-80:25.) These soil samples are the basis for an "influential" and "highly uncertain" variable which measures the extent that PFOA will stick to organic matter as it

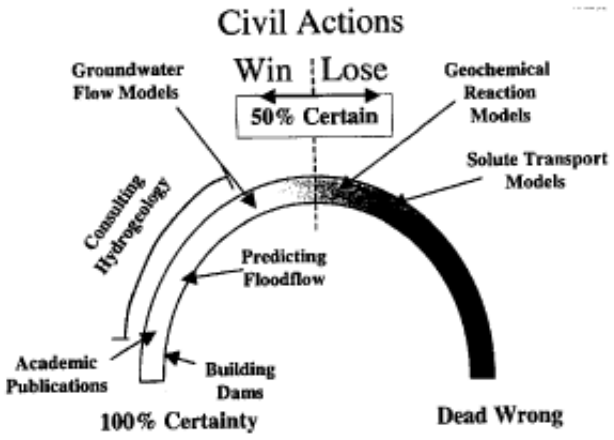
moves through the ground. (*Id.* at 78:7-15.) Without comparing this key parameter to any soil in the class area, Dr. Siegel has no basis to believe this calculation, or any of his other calculations, is indeed representative.

In any event, even a truly "representative" square-meter area would not be a reliable method to predict PFOA transport throughout a class area containing substantial variability. The same infirmities that render Dr. Siegel's opinion an inadequate fit for class certification, as explained above, also render Dr. Siegel's methods unreliable. *See supra* Section I.B. Without accounting for this variability—or even attempting to do so—Dr. Siegel's opinion cannot reliably predict PFOA transport in the class area.

b. Dr. Siegel's Methods Are Unreliable and Made for Litigation

Expert testimony "created for the purpose of litigation" is inherently suspect. *Mike's Train House*, 472 F.3d at 408; *see also Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1316-17 (9th Cir. 1995) (*Daubert II*); *Awad v. Merck & Co.*, 99 F. Supp. 2d 301, 304 (S.D.N.Y. 1999), *aff'd sub nom. Washburn v. Merck & Co.*, 213 F.3d 627 (2d Cir. 2000). This is so because an expert must "employ[] in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho*, 526 U.S. at 152. Because a "scientist's normal workplace is the lab or the field, not the courtroom or the lawyer's office," testimony based on methods used for the first time in litigation is unreliable. *See Daubert II*, 43 F.3d at 1317.

Dr. Siegel openly disavows that standard, claiming that his litigation opinions in hydrology do not have to meet the standards of reliability expected of scientists in peer-reviewed literature. Dr. Siegel uses a spectrum of "hydrologic certainty" (pictured right) that "presents the level of uncertainty related to various techniques commonly used in hydrology." (Siegel Tr., Ex. Q at 522.) Whereas academic publications strive to approach high levels of certainty, the type of "solute transport model" he used in this case is "uncertain," closer to the "Dead Wrong" side of his scale, and not otherwise reliable when used outside the courtroom. (*Id.*) According to Dr. Siegel, this method does "not accurately predict hydrologic and geochemical phenomena well." (*Id.*; Siegel Tr. 127:21-128:1.) The "reliability of … simple solute transport models … to predict fate and transport outside their calibration sites ***has not been demonstrated***." (Siegel Tr., Ex. R at S113 (emphasis added).)



Outside the courtroom, he "strive[s] to attain" the "certainty that academics [seek] … before they publish a paper, maybe >90%." (Siegel Tr., Ex. Q at 522.) But as a litigation hydrogeologist, he believes that a "certainty greater than 50% is the same as a certainty of 100%." (*Id.*; Siegel Tr. at 126:8-15.) According to Dr. Siegel, "the purpose of law is not to discover 'truth' but, rather, to adjudicate disputes in a timely fashion." (Siegel Tr., Ex. Q, at 522.) But this particular "'truth' costs money and a dilemma always … is how much a client wants to pay for the truth he gets." (*Id.* at 521.)

The problems with this litigation-driven methodology are amply illustrated by the two-step

method Dr. Siegel developed to estimate PFOA concentration in each of his hypothetical square-meter areas. First, he implemented an approach from an article by Rao (1985) that did not even involve PFOA to determine how long it would take for PFOA on the ground to travel to the water table. (Siegel Tr. at 36:22-37:3.) Second, Dr. Siegel used differential equations governing the mixing of waters derived from Harte (1988) to determine how concentrations of PFOA will rise and then be flushed away by additional water. (*Id.* at 97:12-98:1.) Neither of the two steps has ever been used outside of a courtroom to model the movement of PFOA.

For the first step, Dr. Siegel adapted the Rao study, which developed a laboratory method to "screen pesticides and determine which pesticides would move faster or slower given their chemical properties." (Siegel Tr. at 51:2-6.) The model was ***not*** intended "to be a predictive tool, but rather a simple method for ranking a number of pesticides in terms of their *relative potential* to intrude into groundwater." (Siegel Tr., Ex. G at 7) (emphasis in original).) The authors "perceive[d] the index to be used by regulatory agencies in a preliminary evaluation of a large number of pesticides." (*Id.*) Dr. Siegel offers no reason why Rao's method applies to predict PFOA movement through soil. (Siegel Reb. Rpt. at 2-6.) Outside the courtroom, he has never applied Rao's method to determine the transport of PFOA through soil, and is "not aware" of anyone else who has, whether in peer-reviewed literature or elsewhere. (Siegel Tr. at 52:3-18.) Dr. Siegel knows Dr. Rao but never even asked him whether it would be scientifically appropriate to use the Rao model for PFOA. (*Id.* at 68:12-20.) Dr. Siegel "created the … methodolog[ies] at issue for th[e] purpose" of litigation, and they are thus unreliable. *Mike's Train House*, 472 F.3d at 408.

Moreover, Rao made clear that his methods are based on key assumptions, which do not apply to this case and render Dr. Siegel's reliance on Rao's method unsound. Rao stated that

"heterogeneities with depth" of the water table "would invalidate" one of the core assumptions underlying Rao's method. (Siegel Tr. at 71:10-15.) Yet in this case, Dr. Siegel concedes that the water table depth is heterogeneous throughout the Bennington area. (*Id.* at 71:20-25.) Further, Rao assumed that the organic partition coefficient, which measures the way a chemical sticks to soil, can be estimated. (Siegel Tr., Ex. G, at 7). But Dr. Siegel recognizes that this variable is "uncertain" in the class area. (*Id.* at 79:4-7.) This assumption, too, is invalid as applied in this case. Dr. Siegel's extension of the Rao article to a context not permitted by the author's explicit limitations and assumptions is unreliable. *See Huss*, 571 F.3d at 459; *Mirena*, 169 F. Supp. 3d at 431.

For the second step of his opinion, Dr. Siegel utilizes a "back-of-the-envelope style of approximation" to "determine … how concentrations of PFOA … will rise …, and then once … clean recharge [water] eventually gets in, how long it would take for the PFOA to approximately dissipate." (Siegel Tr. at 97:12-98:1, 100:2-24.) Using a differential equation from a textbook by Harte, Dr. Siegel opines that PFOA will likely continue to wells where it is not yet present and then persist in the area. (Siegel Class Rpt. at 1-2.) Dr. Siegel never "published any peer-reviewed materials in which [he] used any differential equations from Harte to predict the mixing of [a] solute in groundwater." (Siegel Tr. at 101:9-13.) Nor has he "seen any other scientific investigator who published a peer-reviewed work who used the Harte equations to predict the concentrations of [a] solute in groundwater at a particular site." (*Id.* at 101:14-18.) Dr. Siegel's attempt to apply inapposite methods made for this litigation must be rejected.

c. Dr. Siegel Fails to Adequately Exclude Alternative Sources

Though Dr. Siegel's approximation does not purport to determine the source of PFOA at any location, he opines that there are no "other sources of PFOA in the groundwater" in the proposed class area other than Saint-Gobain. (Siegel Decl., Dkt. 107-44, ¶ 11.) But he admits he

did not consider a host of potential sources. (Siegel Tr. at 157:8-163:12.) For the one alternative source he did consider, the Bennington Landfill, his analysis is based on incomplete or unsupported information.

Omission of Alternate Sources: An expert must address other obvious sources that can explain an observed condition. *See Doe v. Am. Med. Systems, Inc.*, 96 F. App'x 758, 759 (2d Cir. 2004); *In re Fosamax Prods. Liab. Litig.*, 688 F. Supp. 2d 259, 268 (S.D.N.Y. 2010). An expert cannot "ignor[e] alternative explanations." *Doe*, 96 F. App'x at 759. Dr. Siegel "agree[s] if there's … compelling evidence of an additional source and you ignore it, it would not be an appropriate scientific method." (Siegel Tr. at 151:9-14.) Yet that is precisely what he does here.

Products containing PFOA have been used pervasively for decades in an array of consumer and industrial applications, including pesticides, paints, printing ink, food packaging, car wash detergents and protectants, and more. (TAC, Dkt. 113, ¶ 17.) Business and residential use and disposal of at least some of these PFOA-containing products may obviously contribute to observed levels of PFOA in groundwater in the Bennington area. [redacted] (Morrissey Rpt. at 31.)

Dr. Siegel does not address in his class certification report any of these business or residential sources of PFOA. (Siegel Tr. at 163:2-12, 24-25, 164:1.) Instead, in his rebuttal report, he now relies on a reported review of environmental records, completed six months prior to the submission of his first report but not produced until the submission of his third and fourth reports. (*See* Siegel Reb. Rpt. at 2-18.) But that review would not say anything about businesses and residences using and disposing of common products that contain PFOA. (*Id.*) Similarly, Plaintiffs' counsel obtained affidavits of selected property owners—cherry-picked from a much larger list—

stating that they never used PFAS compounds. Dr. Siegel now relies on those affidavits without any apparent regard for whether these individuals even know the common presence of PFAS compounds in many products they may use. (*Id.* at 2-22.) After initially rendering his opinions that ignored these obvious potential sources, Dr. Siegel's last-ditch effort to address these sources is not reliable.

Besides business and residential sources, Dr. Siegel cannot say whether he considered any Superfund sites, other than the Bennington Landfill. He does not "recollect" whether he looked at these sites as potential sources. (Siegel Tr. at 162:4-9.) He claims to have looked at another landfill as a potential source, but then could not "recollect the name of it" and could only state that he thought it was "in the general area." (*Id.* at 161:19-162:3.) By failing to adequately consider these obvious potential sources, his opinions as to alternative sources are unreliable.

Inadequate Basis to Rule Out the Landfill: Dr. Siegel opines that the "Bennington Landfill is not a plausible source of PFOA contamination of the domestic wells located near it." (Siegel Class Rpt. at 4-2.) Yet materials containing PFOA were likely disposed of in the Bennington Landfill. (Siegel Tr., Ex. V, at 22.) [redacted] (Morrissey Rpt. at 30.) Moreover, southwest of and downgradient from the Landfill are several domestic bedrock wells containing elevated concentrations of PFOA. (*Id.*) Thus, liquid containing PFOA could have migrated downhill from the Landfill and contributed to the presence of PFOA in these wells and similar wells in the area. Dr. Siegel's attempt to exclude the Landfill as an alternative source is unreliable for at least four reasons:

First, [redacted] (Morrissey Reb. Rpt. at 12), Dr. Siegel dismisses the possibility of migration because

a water-proof leachate collection vault was installed at the Landfill. (Siegel Reb. Rpt. at 2-16, 2-17.) [redacted] (Morrissey Reb. Rpt. at 12.)

Second, Dr. Siegel purports to rule out the Landfill because a well outside it has "a lower PFOA concentration than the monitoring wells at the landfill." (Siegel Reb. Rpt. at 2-16.) [redacted] (Morrissey Reb. Rpt. at 11-12.)

Third, Dr. Siegel claims that because other contaminants found at the Bennington Landfill have not been found in the wells to the southwest, the Landfill leachate with PFOA did not migrate in that direction. (Siegel Reb. Rpt. at 2-17.) [redacted] (Morrissey Reb. Rpt. at 12.)

Fourth, Dr. Siegel opines that even if the Bennington Landfill is an alternative source, Saint-Gobain was the only contributor to PFOA contamination there. (Siegel Reb. Rpt. at 2-22; Siegel Tr. at 155:13-156:9.) But it is undisputed that many companies disposed of materials in the Bennington Landfill that potentially contained PFAS or PFOA (Siegel Tr., Ex. X; Ex. V at 8-9), including Eveready Battery. (Siegel Tr. at 158:14-19.) Dr. Siegel did not "look for evidence" that certain other potential sources used PFOA. (*Id.* at 158:3-8.)

d. The Rate of Error in Dr. Siegel's Methods Is Too High

Dr. Siegel first opined that the total PFOA mass in the aquifer was 1,150 lbs and that it would take approximately 150 years for PFOA to be flushed from the groundwater. (Siegel Tr., Ex. P.) After Saint-Gobain's expert, Mr. Morrissey, pointed out that Dr. Siegel double- and triple-counted the same data, Dr. Siegel then admitted that his approximations were wrong. (Siegel Reb. Rpt. 2-14.) Now, Dr. Siegel has changed these estimates. The total PFOA mass is approximately

215 lbs, and it would take 30 years for PFOA to be flushed out—meaning that his original estimate was a ***five-fold*** over-approximation. (Siegel Reb. Rpt. at Fig. 7.)

Dr. Siegel has changed other data throughout the four reports he has submitted in this litigation. [redacted] (Spreadsheet 11/3/17.) But it also may take six years (Siegel Merits Rpt. at 3-3), or perhaps two years. (*Id.*) It may take five years. (*Id.*) But those are just the estimates he makes in his reports. In a spreadsheet that he apparently used to make these calculations, he also calculated PFOA transport would take about eight years, and also over fourteen years (Spreadsheet 1/10/18.) There may even be more calculations Dr. Siegel performed, as he admits he "did not save most spreadsheets reflecting these calculations." (Siegel Reb. Rpt. at 2-11.)

To support these results, Dr. Siegel adjusted some of the input data to his calculations, as summarized in Table 1. He used [redacted] for the bulk density of soil, but he also used 2.2, or a figure twenty-five percent higher. (*Compare* Spreadsheet 11/3/17, *with* Siegel Merits Rpt. at 3-3.) Recharge water may be [redacted] (Spreadsheet 11/3/17), but it may also be over twenty-five percent higher at 25 inches (Siegel Merits Rpt. at 3-3), or nearly eighty percent higher at 35 inches (Spreadsheet 1/10/18). The water table depth may be five feet, or ten feet, or twenty feet, or thirty feet, or thirty-five feet. (*See* Siegel Merits Rpt. at 3-3.) Dr. Siegel does not state the reasons for changing these variables. (Siegel Tr. at 64:7-13.)

Under *Daubert*, a methodology that has a high error rate is not reliable. *Daubert*, 509 U.S. at 594; *Almeciga v. Ctr. for Investigative Reporting, Inc.*, 185 F. Supp. 3d 401, 421-22 (S.D.N.Y. 2016); *Valente v. Textron, Inc.*, 931 F. Supp. 2d 409, 425-26 (E.D.N.Y. 2013). Here, not only was Dr. Siegel's initial estimate for PFOA to be flushed from the area off by a factor of five, but he also has submitted multiple calculations containing numerous changes in the values of key

variables, leading to reported PFOA transport times ranging from two years to a five-fold increase to ten years, and even higher. An error rate this high renders his opinion unreliable.[12]

Table 1	**Spreadsheet Produced on Nov. 3, 2017**	**Merits Rpt., Table 1 (Sand and Gravel)**	**Spreadsheet Produced on Jan. 10, 2018 (S&G Min tab)**	**Spreadsheet Produced on Jan. 10, 2018 (Silty Loam Max tab)**
Recharge (inches/year)	[redacted]	25	35	19
Soil Bulk Density (g/cm^3)	[redacted]	2.2	1.3	2.4
Soil Porosity	[redacted]	0.32	0.21	0.49
Organic content of soil	[redacted]	0.002	0.008	0.004
Partitioning Coefficient (ml/g)	[redacted]	Not provided	0.768	0.384
Depth to water table (ft)	[redacted]	30	5	20
Years for PFOA to travel to water table	[redacted]	**6**	**1.77**	**14.44**

C. Mr. Unsworth's "Added Cost" Methods Are Unreliable

For the reasons set forth in Section I.C.2, Mr. Unsworth's use of "average" data means it does not fit class certification. For related reasons, his decision to ignore variation within the class as to many of the relevant variables renders his opinion on "added cost" damages of the class members unreliable.

Although Mr. Unsworth asserts the "position that a factor can still be common to the class, even though it's not the same for everyone" (Unsworth Reb. Tr. at 54:10–20), the law is decidedly

[12] Dr. Siegel's opinions suffer from other infirmities. He does not ground his solute transport model in reliable data. Nor did he take any physical samples or perform any testing to calculate the organic distribution coefficient, a key variable that measures how quickly a substance will stick to the soil. (Siegel Tr. at 79:11-19.) This variable is "influential" and "highly uncertain." Relying on calculations for this variable from another study that did not study the Bennington area creates "too great an analytical gap between the data and the opinion proffered." *Joiner*, 522 U.S. at 146.

to the contrary. The use of averages can be "a critical flaw in the work of a plaintiffs' economics expert," since "there is a risk that the averages may hide substantial differences … , which may be critical for determining whether there is individual impact." ABA Section of Antitrust Law, *Econometrics: Legal, Practical, and Technical Issues* 360 (2d ed. 2014). The issue is not whether [the expert] has shown just *any* method for proving [injury] and damages on a class-wide basis; it is whether the method he proposes is a *reliable* means of common proof." *Reed v. Advocate Health Care*, 268 F.R.D. 573, 577, 593 (N.D. Ill. 2009). Not only does the use of average measurements fail to "indicate whether each putative class member suffered harm," but it can also "unacceptably mask[] the significant variation" among individuals. *Id.* at 591-92. "In other words, it is not a methodology common to the class that can determine [injury] with respect to each class member." *Id.* at 591. Here, Mr. Unsworth's decision to ignore individual data in favor of averages hides a wealth of substantial differences among the members of the putative class.

Water Rates and Usage: Mr. Unsworth testifies that individual water usage could differ from household to household based on differences in household size, property size, and idiosyncratic usage patterns (Unsworth Tr. at 118:5-119:1), but fails to address the effect of that variation on his opinion. Instead, he computes the cost of municipal water for members of the proposed class by assuming average values for water usage and water rates for each municipality. (Unsworth Merits Rpt. at 11.) Though he opines, without supporting data, that he believes most customers in Bennington will choose to pay the "average" water rates as permitted by the utility, he was unable to say that all would do so. (Unsworth Tr. at 118:5-119:21.) [redacted] (Mullin Rpt. at 26-27; Unsworth Tr. at 119:10-21, 120:4-15, 121:5-21, 123:18-19.) Moreover, North Bennington ***does not*** allow customers to elect the average rate, yet he "assume[s] an average" value. (Unsworth Tr.

at 123:20-124:2.) [redacted] (Mullin Rpt. at 31.) He admits to the existence of variation in electrical costs, but fails to address the issue. (Unsworth Tr. at 75:2-12, 162:21-25.)

Had Mr. Unsworth considered actual water usage data even for the named Plaintiffs, he would have discovered great variation:

- Water usage varies according to household size. Whereas Ted and Linda Crawford live in a household of four adults (T. Crawford Tr. at 43:16-19), Gordon Garrison and his partner are the only individuals residing at his home (Garrison Tr. at 23:18-22), and Ron Hausthor lives with his wife and daughter, when she is not away at college. (Hausthor Tr. at 29:18-20.)
- Water usage varies according to amount of time spent at home. [redacted] (Hausthor Tr. at 194:2-5.) By contrast Linda Crawford spends all day at home (T. Crawford Tr. at 198:17-18), and [redacted] (Sumner Tr. at 212:8-10.)
- Water usage varies according to household uses of water. Leslie Addison waters her garden once a day during growing season. (Addison Tr. at 48:20-21.) Ronald Hausthor regularly uses his hot tub (Hausthor Tr. at 69:3-4), and the Crawfords pay to fill their pool from a nearby hydrant. (L. Crawford Tr. at 146:11-15, 149:13-19.)

Preference for Municipal Water: Mr. Unsworth's opinion is based on his assumption that putative class members are not better off switching to municipal water. He assumes that, because an official of the local utility told him that few people had requested municipal water previously, they all prefer to remain on well water. (Unsworth Merits Rpt. at 11.) [redacted] (Mullin Rpt. at 21-22.) Moreover, record evidence shows preferences of the putative class members in this regard vary individually. William Sumner testified that, if municipal connections had been available previously, he would have considered a connection to it for the sake of ease and cost, instead of drilling a well. (*See* Sumner Tr. at 245:13-22.) [redacted]

[redacted] (L. Crawford Tr. at 43:13-14; L. Crawford Decl., Dkt. 107-56, ¶ 7.) Other absent class members have likewise declined to connect. (Schmeltzer Email.)

Well Maintenance: Mr. Unsworth includes estimated values for groundwater well equipment, including the replacement of the pump and pressure tank, in his annualized costs of private wells. (Unsworth Merits Rpt. at 12-13; Unsworth Tr. at 152:11-13, 156:18-21.) However, his report applies fixed values for the amount and frequency of these expenses, which do not reflect the current age of the well equipment of the proposed class members, and thus do not accurately address how frequently it would need to be repaired. (*See* Unsworth Tr. at 158:1-6, 149:12-14, 163:7-12.) Even more tellingly, the very sources he cites to support those values show a great degree of variation in the cost of replacing this equipment:

- **Pump Replacement Costs:** Mr. Unsworth opines that a proposed class member would need to spend $1,300 every 17 years to replace the pump on each individual's groundwater well (Unsworth Merits Rpt. at 13), but his sources reported that the replacement costs of a well pump can range between $1,000 and $2,000.[13] (Unsworth Tr. Ex. 12 at 4.) Mr. Unsworth agrees that "we saw a variety of costs" and suggested that "$2,000 seemed high" (Unsworth Tr. at 150:19-22), but ultimately concedes that the replacement costs varied by market and equipment type. (*Id.* at 150:22-24.) Likewise, Mr. Unsworth's sources stated that the lifecycle of a well pump can be tied to additional individualized factors, such as the performance of periodic maintenance and the presence of high concentrations of sediment in the groundwater. (Unsworth Tr. Ex. 12 at 3-4; *accord* Mullin Rpt. at 28-29.) In fact, two of the named Plaintiffs reported that they incurred substantially greater costs to replace their well pump than Mr. Unsworth's average cost: Linda Crawford gave "an estimate of about 5 or $6,000," whereas her husband testified that the replacement cost was $3,000. (L. Crawford Tr. at 97:19-21; T. Crawford Tr. at 85:25-86:4.)

- **Pressure Tank Replacement Costs:** Although Mr. Unsworth also assumes that the replacement costs for a pressure tank should be "[n]o more than $1,000, installed, for [a] typical home" (Unsworth Tr. Ex. 10 at 1; Unsworth Merits Rpt. at 13), one of the

[13] Another of Mr. Unsworth's sources portrayed the variability more dramatically by describing a typical range of $847 to $2,241 and highlighting that the costs could be as little as $200 or as much as $4,000. (Unsworth Tr. Ex. 13 at 1.) Although this latter source reported the "average" replacement cost to be $1,531 (*id.*), Mr. Unsworth used his own lower, average.

sources identified by Mr. Unsworth reports that the replacement costs for a pressure tank range from $800 to $3,800. (Unsworth Tr. Ex. 13 at 2.)

- **Water Softener Costs:** Likewise, Mr. Unsworth's "added cost" model contends that, on average, a proposed class member who uses a water softening system would spend $2,000 every 15 years for capital costs. (Unsworth Merits Rpt. at 13.) Mr. Unsworth's estimate was based, however, on a source that reported "[h]omeowners can pay as low as $400 for a DIY installation while incurring as high as $4,000 for a full professional installation."[14]

Insurance Adjustment: Mr. Unsworth incorporates a potential insurance discount associated with a municipal water connection into his model. (Unsworth Merits Rpt. at 12.) Notably, however, he acknowledges that the insurance adjustment might vary based on location and risk class, but he nevertheless applies a uniform value in calculating his but-for condition. (*Id.* at 12-13 & n.17.) By failing to address a variable his report acknowledges, his opinion is unreliable.

Individuals on POETS: Some individuals will, after remediation, still use private well water supplies connected to POETs (point of entry treatment systems), whether by choice or because connection to the municipal supply is infeasible. (*See* Schmeltzer Email.) Even though those individuals will not experience the added cost of switching to municipal water, Mr. Unsworth nevertheless opines that his "added cost" model presents a fair measure of their damages. (Unsworth Merits Rpt. at 14.) He offers no basis for his opinion that any purported losses are comparable—much less equivalent—to the purported costs of transitioning to municipal water. Mr. Unsworth concedes that an individual inquiry into the "circumstances of how to make those municipal connections to each member" would be necessary. (Unsworth Reb. Tr. at 132:1-6.) Yet he makes no effort to calculate the costs of operating the POET or to account for his admitted

[14] Kate Halse, *How Much Does Water Softener Installation Cost?* (Sept. 10, 2015), *available at* https://bit.ly/2zt6DUe (last visited Nov. 25, 2018).

"uncertainty" as to a variety of matters relevant to such damages—whether PFOA concentrations remain steady, deeper wells may be constructed, or connections to the municipal water ultimately prove feasible. (Unsworth Tr. at 57:21-58:17.) Instead, he merely "assign[s] them a loss" (*id.* at 59:16-22), even if someone else incurred the cost of installing and operating the system. (Unsworth Reb. Tr. at 139:4-8.) Mr. Unsworth's speculative *ipse dixit* opinion of what these damages would be is inadmissible. *Joiner*, 522 U.S. at 146.

III. PLAINTIFFS' EXPERTS' MERITS OPINIONS ARE INADMISSIBLE

In addition to their opinions on class certification, Plaintiffs' experts offer "merits" opinions in support of Plaintiffs' claims. The methodologies of much of these merits opinions are indistinguishable from those advanced for class certification and, thus, should be excluded for the same reasons. Beyond those, Saint-Gobain addresses two categories of opinions separately:

A. Dr. Ducatman and Dr. Grandjean proffer medical causation testimony opining that exposure to PFOA causes adverse health effects. To the extent these opinions follow any discernible methodology at all, it is subjective, litigation-driven, and contrary to well-developed principles for evaluating whether exposure to an agent causes adverse health effects. They are unreliable and inadmissible.

B. Several of Plaintiffs' experts offer testimony that constitutes legal opinion and is therefore inadmissible. Dr. Hopke, Dr. Siegel, and Mr. Mears all proffer narrative summaries of documents selected by counsel, from which they opine that Saint-Gobain acted unreasonably or in violation of the law. Such narrative summaries of evidence lack any scientific method. Likewise, Mr. Unsworth says that, without regard to their reliability, the individual Plaintiffs' diminution in value opinions are permitted by Vermont law, another question of law reserved to this Court.

A. Plaintiffs' Experts' Medical Causation Opinions Are Unreliable

1. Dr. Ducatman Has No Discernible Methodology

In addition to his opinion in support of medical monitoring for the proposed exposure class, Dr. Ducatman offers an opinion as to medical causation: that exposure to PFOA causes the litany of adverse health effects as to which he proposes medical monitoring. To the extent this opinion

applies any discernible methodology at all, it is riddled with errors that make it fundamentally unreliable under *Daubert*.

"Before a court can evaluate the reliability of an expert's methodology, the expert must employ one." *Milanowicz v. The Raymond Corp.*, 148 F. Supp. 2d 525, 535 (D.N.J. 2001). An expert is expected to demonstrate "a sufficiently rigorous … connection between that methodology and [his] conclusions" to establish reliability under Rule 702. *Nimely v. City of New York*, 414 F.3d 381, 396 (2d Cir. 2005). In principle, Dr. Ducatman agrees that scientists should describe their methods and explain their reasoning so that others can understand how the data were analyzed and how the conclusions were reached. (Ducatman Tr. at 10:20-24.) In practice, he failed to apply ***any*** methodology, much less a reliable one. His causation opinions should be excluded.

Dr. Ducatman's class and merits reports do not identify what criteria he employed to select, exclude, and evaluate scientific studies. The only steps he articulated were a literature search and "other things that [he did] as a matter of intuition." (*Id.* at 86:1-20.) When asked to describe his method, he provided no response except to call the question "very broad." (*Id.*) Following this non-response at deposition, Dr. Ducatman furnished a rebuttal report (his third) in which, for the first time, he purported to describe the methodology for his two prior reports as "***equivalent*** to the mainstream weight-of-the-evidence approach." (Ducatman Reb. Rpt. at 9 (emphasis added).) Initially, that the "underpinnings" of Dr. Ducatman's opinion "have changed in direct response" to being challenged shows that his methods are not based on science, but litigation, and therefore inadmissible. *Haller*, 598 F. Supp. 2d at 1296-97.

In any event, Dr. Ducatman cannot backfill his standardless opinion through *post hoc* invocation of new methods. "A rose by another name may smell as sweet," but simply labeling an analysis as ***mainstream*** "doesn't make it so." *In re Lipitor (Atorvastatin Calcium) Mktg., Sales*

Practices & Prod. Liab. Litig. (No II), 892 F.3d 624, 643 (4th Cir. 2018). For the reasons set forth more fully in Section III.A.3 with respect to Dr. Grandjean, the "weight of the evidence" methodology used by regulators for preventive public health purposes is inapplicable to the evaluation of liability in tort. *See, e.g.*, *Allen*, 102 F.3d at 199. Moreover, as the Third Circuit held, "[t]o ensure that the ... weight of the evidence criteria is truly a methodology, rather than a mere conclusion-oriented process ... there must be a scientific method of weighting that is used and explained." *Zoloft*, 858 F.3d at 796 (citations omitted). That is, "an expert must explain 1) how conclusions are drawn for each ... criterion and 2) how the criteria are weighed relative to one another." *Id.*

Dr. Ducatman does not do this. His rebuttal report fails to provide (1) any description of what criteria he uses to include, exclude, and weigh evidence; (2) how he draws inferences as to those criteria; (3) how the criteria are weighed relative to one another; or (4) how he integrates evidence to form an opinion. Such an "unscientific 'black box' approach ... prevents the finder of fact, or other experts seeking to validate or check his work, from conducting a meaningful and informed review." *In re Mirena Ius Levonorgestrel-Related Prod. Liab. Litig. (No. II)*, 2018 WL 5276431, at *28 (S.D.N.Y. 2018). [redacted] (Guzelian Reb. Rpt. at 13.) An expert's "assurances that he has utilized [a] generally accepted scientific methodology is insufficient." *Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 276 (5th Cir. 1998). It is an "*ipse dixit*" based on nothing more than the expert's credentials, and it is inadmissible. *Joiner*, 522 U.S. at 146.

2. Dr. Ducatman's Causation Opinion Is Unreliable

Lacking any ascertainable methodology for his causation analysis, Dr. Ducatman's opinion is riddled with errors. In opining based on his review of studies that PFOA causes a variety of

adverse health effects, Dr. Ducatman was not writing on a blank slate. Rather, as courts have repeatedly recognized, the field of epidemiology is subject to several well-developed standards for evaluating whether there exists a causal relationship between an exposure and a disease:

First, the expert must evaluate the totality of the relevant data to determine whether they report an association between exposure and disease. RMSE at 604-05; *K.E. v. GlaxoSmithKline LLC*, 2017 WL 440242, at *10-11 (D. Conn. 2017). In doing so, the expert should consider whether an association is true or false—that is, whether it may be explained by chance, bias, or confounding. RMSE at 572-74; *Zoloft*, 858 F.3d at 793.

Second, only after a true association has been identified, the expert should apply the "Bradford Hill criteria" to determine whether the association is causal. *Lipitor*, 892 F.3d at 642; *Dunn v. Sandoz Pharm. Corp.*, 275 F. Supp. 2d 672, 678 (M.D.N.C. 2003). "Those factors include temporal relationship, strength of the association, dose-response relationship, replication of the findings, biological plausibility, consideration of alternative explanations, cessation of exposure, specificity of the association, and consistency with other knowledge." *Lipitor*, 892 F.3d at 638 (citing RMSE at 599–600).

Third, if a valid association is identified, the expert should evaluate the dose at which the association obtains. *Allen*, 102 F.3d at 199; *Mitchell v. Gencorp, Inc.*, 165 F.3d 778, 781 (10th Cir. 1999). Since even water is toxic at sufficient doses, the expert should consider how much exposure is necessary before an alleged effect is observed. *Allen*, 102 F.3d at 199.

Dr. Ducatman's opinion violates these standards, each one of which is essential to the reliability of his opinion. These errors are illustrative only, with a more comprehensive catalog of Dr. Ducatman's errors furnished in Appendix B to Dr. Guzelian's report. Because Dr. Ducatman has not "employ[ed] in the courtroom the same level of intellectual rigor that characterizes the

practice of an expert in the relevant field," *Kumho*, 526 U.S. at 152, his medical monitoring opinions are inadmissible.

a. Dr. Ducatman Cherry-Picks Study Results for His Opinion

"When experts rely on epidemiological evidence to support causation, they must provide the jury with a full picture of the state of the field." *K.E.*, 2017 WL 440242, at *10-11 (citing *Guardians Ass'n of N.Y.C. Police Dept., Inc. v. Civil Serv. Com.*, 633 F.2d 232, 240 (2d Cir. 1980)). Thus, a causation opinion that "completely ignore[s] the many epidemiological studies" that do not show an association is unreliable. *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 885 (10th Cir. 2005).

Dr. Ducatman agrees that all available relevant data should be assessed before arriving at an opinion, and that "you don't want to be selective" or cherry-pick evidence. (Ducatman Tr. at 12:4-13.)

Q. Do you agree that selective cherry picking of data is inconsistent with a valid and reliable scientific methodology?
A. No one wants to be just cherry picking when they come up with a method.

(*Id.* at 12:21-25.) Yet he did not address the totality of the data (*id.* at 83:16-25) or the studies whose findings are contrary to his opinion. (*See, e.g.*, Mandel Rpt. at 36-40, 43-48, 66-71, 77.) Instead, he cited only the studies that he says support his opinion. His only explanation for why he did so was that those studies "were best in class," a subjective term for which he provided no elaboration. (Ducatman Tr. at 85:15-18.) Rather than providing a principled reason for excluding these other studies from discussion, he merely explained that "[a]t some point, ***you run out of gas***." (*Id.* at 83:22-23 (emphasis added).)[15]

[15] Even his reference to PFOA blood serum levels found in several Plaintiffs is one-sided and selective. (Ducatman Class Rpt. at 4.) He lists the PFOA blood levels of four named Plaintiffs, but when asked why he does not include other Plaintiffs' PFOA levels in his report as well, he simply states that he does not "recall why [he] didn't." (Ducatman Tr. at 55:21-24.)

This subjective and results-oriented statement is unscientific, unreliable, and inadmissible. An expert who offers an opinion "without confronting scientific literature that refutes this notion, casts doubt upon the reliability of her opinions." *Mirena*, 169 F. Supp. 3d at 449 (citing *Rezulin*, 369 F. Supp. 2d at 425). "[J]ust as omitting data might distort the result by overlooking unfavorable data, cherry-picking data produces a misleadingly favorable result by looking only to 'good' outcomes." *Freeman*, 778 F.3d at 469-70; *accord Bricklayers & Trowel Trades Int'l Pension Fund v. Credit Suisse Securities (USA) LLC*, 752 F.3d 82, 92 (1st Cir. 2014); *Barber*, 17 F. App'x at 437. Such selective citation "undermines principles of the scientific method and is a quintessential example of applying methodologies (valid or otherwise) in an unreliable fashion." *Lipitor*, 892 F.3d at 634. At bottom, it shows the expert has not exhibited "the same level of intellectual rigor that characterizes the practice of an expert in the relevant field," and requires exclusion. *Kumho*, 526 U.S. at 152.

b. Dr. Ducatman Ignores Study Limitations and Results

Dr. Ducatman's opinion fares no better with the studies he ***does*** cite. Evaluating alleged causal associations in humans is "very challenging" and becomes more difficult where exposure doses are low, the health conditions at issue are commonly observed, and there has been exposure to other chemical substances. (Calabrese Rpt. at 5.) Thus, in conducting that inquiry, not all scientific studies are created equal. Different study designs—whether clinical trials, case-control, cohort, or cross-sectional—are subject to different risks of chance, bias, and confounding. RMSE at 555-62. And in particular, various metrics reported by the studies, such as confidence intervals and *p*-values, provide measures of whether the results can be attributed to chance—that is, whether they are statistically significant. *See id.* at 574-81. A reliable methodology, at minimum, considers these factors in determining whether a reported association is valid. *Coleman v. Union Carbide Corp.*, 2013 WL 5461855, at *38 (S.D.W. Va. 2013); (*see also* Mandel Rpt. at 20, 22.)

Dr. Ducatman acknowledged that a study's reported findings could be erroneous due to "chance, bias, or confounding" and otherwise limited by the study design. (Ducatman Tr. at 18:14-20:14.) Yet he did not attempt to address or even discuss these issues for any of the studies he cited. [redacted] (Mandel Rpt. at 7; *see also* Guzelian Rpt. at App'x B.) He provides no information on the routes, duration, and concentrations of PFOA exposure in the studies cited. His reports do not review the basic parameters of the studies he cites, such as sample sizes, PFOA doses, or the characteristics of the study participants. He does not identify each study's design and inherent limitations—even those identified by the study authors. His reports do not denote the cited studies' point estimates, confidence intervals, or *p*-values. Dr. Ducatman's hit-and-run manner provides none of this essential information and thus does not "employ[] in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho*, 526 U.S. at 152.

Moreover, the studies Dr. Ducatman cites receive only cursory treatment that ranges from one word to two sentences:

> Q. You do not discuss, analyze, or explain the methodological limitations or the particular data from any of the studies that you cite through endnotes on pages five and six of your report. Do you?
> A. No.
> Q. Why not?
> A. ***I didn't think it was needed.***

(Ducatman Tr. at 83:4-11 (emphasis added).) In *Mirena*, the court criticized the expert for a similarly limited engagement with the scientific literature: "Beyond citing these studies, Dr. Plunkett does not discuss any of them in more than a sentence." 2018 WL 5276431, at *34. [redacted] (Guzelian Rpt., App'x B at 1.) His *ipse dixit* that such discussion of the studies he cites was not necessary is insufficient. *Joiner*, 522 U.S. at 146.

c. Dr. Ducatman Improperly Relies on Animal Studies

Of all the limitations in the data that Dr. Ducatman ignores, the most significant is his reliance on animal studies to support causation in humans. There are significant and well recognized limitations and uncertainties on extrapolating data from experimental animals to humans. *Rider v. Sandoz Pharms. Corp.*, 295 F.3d 1194, 1202 (11th Cir. 2002); *Rezulin*, 369 F. Supp. 2d at 407; *Mirena*, 169 F. Supp. 3d at 445. The potential effects of substances in animal studies can vary based on differences among species, and even on strains of the same species, "in metabolic rates, anatomy, cellular or biochemistry and in the absorption, distribution, metabolism and elimination of chemicals." (Ducatman Tr. 32:25-33:17.) The ATSDR questions the use of animal studies to infer results of PFOA exposure in humans and notes, for example, that "[t]here are profound differences in the toxicokinetics and mode of action of perfluoroalkyls between humans and experimental animals."[16] Dr. Ducatman agrees that extrapolating results from animal models to humans can be difficult and must be done with "scientific capability." (Ducatman Tr. at 31:19-32:12.) Yet his opinion fails to consistently address which of the cited studies involved animals.

d. Dr. Ducatman Conflates Association With Causation

A statistical association "*is not equivalent to causation*"; nor does it "necessarily imply a causal effect." RMSE at 552 & n.7 (internal citation omitted). Dr. Ducatman agrees that "the word association is not a substitute for the word causation," and that it is an "important area of scientific discussion" to distinguish between the two. (Ducatman Tr. at 18:7-13.) Instead, something more "is needed to bridge the gap between association and causation." RMSE at 218.

[16] ATSDR, *ToxGuide for Perfluoroalkyls* 2 (2015) (Ducatman Tr. Ex. 1 at 2).

Absent from Dr. Ducatman's opinions is any framework for inferring causation from the evidence he cites. His opinions rely heavily on cross-sectional studies, which measure the levels of exposure in individuals with and without a given disease at a single point in time, but generally are hypothesis-generating, not hypothesis-testing, and thus cannot be used to show a causal relationship. (*See* Mandel Rpt., at 20, 31; Calabrese Rpt. at 7); RMSE at 556, 560-61. He nevertheless makes an unexplained analytical leap from (1) reliance on studies reporting statistical associations between PFOA exposure and certain health endpoints to (2) the opinion that PFOA exposure is the key causal element for increased risk of future disease.[17] [redacted] (*See* Mandel Rpt. at 22-23.) Compounding this error is the fact that he cannot point to any peer-reviewed study that has reported that PFOA exposure causes any of the health endpoints that he includes in his reports. (*See* Ducatman Tr. at 76:4-77:25.)

e. Dr. Ducatman Sets an Arbitrary Threshold Dose

"One of the central tenets of toxicology" is that "'the dose makes the poison.'" RMSE at 636; (*see* Ducatman Tr. at 28:20-29:19). "Scientific knowledge of the harmful level of exposure to a chemical plus knowledge that plaintiff was exposed to such quantities are ***minimal facts necessary*** to sustain the plaintiff's burden." *McClain*, 401 F.3d at 1241 (quoting *Allen*, 102 F.3d at 199) (emphasis added); *Mitchell*, 165 F.3d at 781. Failure to lay a "reliable groundwork for

[17] While Dr. Ducatman appears to acknowledge the studies he cites only found potential associations, his reports repeatedly use other imprecise unscientific terms, without definition or distinction. These vague terms include "leads to," "consistently established," "effects with a preponderance of evidence," "probable excess risks needing additional investigation," "results in," "known PFOA-related diseases," "related to," "supported," "indication of," "probable link," and "known to follow." (Ducatman Class Rpt. at 5-6; Ducatman Merits Rpt. at 1-13.) Failing to define such terms [redacted] (Mandel Rpt. at 6), and underscores the lack of scientific precision or a sound methodology in forming his opinions (Calabrese Rpt. at 15).

determining the dose-response relationship" for PFOA "signals a methodology" problem. *McClain*, 401 F.3d at 1241.

Instead of attempting to calculate a threshold dose, Dr. Ducatman incorporates by reference the then-current average blood serum level for PFOA in the U.S. population of 2.1 µg/L. (Ducatman Class Rpt. at 3, 9; Ducatman Tr. at 96:23-97:15, 98:10-17.) He opines that any exposure above this level causes increased risk. (Ducatman Class Rpt. at 9.) He does not provide any data to show that "above-background levels" of PFOA in blood serum is a sufficient threshold dose for causing any disease in humans. *See McClain*, 401 F.3d at 1240-41; (Ducatman Tr. at 78:1-80:5; 104:14-106:16.) Nor does he explain his methodology for setting a threshold dose for PFOA so low or why the national geometric *mean* of PFOA concentrations in blood serum is a meaningful cut-point. *See Rosen*, 78 F.3d at 319-20; *Rezulin*, 369 F. Supp. 2d at 430-31.

This arbitrary dividing line "'reveals a methodological flaw that cannot be overlooked by the court.'" *Adams v. Cooper Indus., Inc.*, 2007 WL 1805586, at *4 (E.D. Ky. 2007) (quoting *Allgood v. General Motors Corp.*, 2006 WL 2669337, at *28-29 (S.D. Ind. 2006)). "[E]quating 'unusual' or 'abnormal' with 'above-average' is not a scientifically valid methodology because it does not take into account the normal distribution of data within a given population." *Id.* In addition to being "unreliable and misleading," "[s]uch a definition of abnormality would deprive the term of all meaning." *Id.* at *4-5. For example, in *Adams*, under the expert's "approach, one would expect half the world's population of approximately six billion people (everyone with levels above the median) to be entitled to a special medical monitoring program." *Id.* at *4 (quoting *Allgood*, 2006 WL 2669337, at *28).

So, too, here. [redacted]

[redacted] (Guzelian Rpt. at 19; Mandel Rpt. at 123-24.) The average blood serum concentration of PFOA in the U.S. population has declined over time, from 5.21 µg/L in 1999-2000 to 2.08 µg/L in 2011-12. (Ducatman Tr. at 102:22-103:21; Ducatman Tr. Ex. 10.) Dr. Ducatman concedes that, if his 2.1 µg/L inclusion criterion is used to determine eligibility for medical monitoring, millions and millions of Americans should have been receiving medical monitoring when the average PFOA concentration in blood serum was more than double its present level. (Ducatman Tr. at 103:22-104:23.) This is another flaw that renders his opinions unreliable.

3. Dr. Grandjean's Rebuttal Opinions Are Inadmissible

a. Dr. Grandjean's Medical Monitoring Opinions Are Inadmissible

Dr. Grandjean opines as to the implementation of medical monitoring generally and as it has been proposed by Dr. Ducatman in this action. (Grandjean Rpt. at 5, 15, 38, 41, 46-48, 51, 55, 69-71.) Plaintiffs have since stipulated that they are not offering Dr. Grandjean "as an expert in medical monitoring." (Grandjean Tr. at 47:1-5.) As set forth in Saint-Gobain's motion to strike Dr. Grandjean's rebuttal report, this concession should be sufficient to end the Court's inquiry and to warrant striking any discussion by Dr. Grandjean about medical monitoring.

Independent of Plaintiffs' proffer, his medical monitoring opinion is unreliable and lacks the necessary fit to the factual issues for the same reasons that Dr. Ducatman's opinions fall short of the standard for admitting expert testimony. *See supra* Sections II.A, III.A; (Grandjean Tr. at 16:2-19:6, 22:9-23:21, 33:20-35:22, 46:1-6, 170:14-171:16, 176:12-177:17, 181:17-182:21.) In addition, Dr. Grandjean concedes that "[e]very individual has his or her own background risk of developing the disease in question." (Grandjean Rpt. at 69.) As with Dr. Ducatman, he also admits that individuals in the proposed class area would vary in the amount and length of their exposure to PFOA, the levels of PFOA in their blood serum levels, their susceptibilities to PFOA, and even

the factors that affect those susceptibilities (Grandjean Tr. at 16:2-19:6, 22:9-23:21), not to mention the "other factors" that "would be hard or impossible to decipher beforehand." (Grandjean Rpt. at 69.) His opinion simply ignores these differences for purposes of opining on the propriety of class-wide monitoring. This attempt to "shortcut" or end-run the challenge that individual issues pose to "class-wide proof" should be "a caution signal." *Broussard*, 155 F.3d at 343.

Similarly, by dismissing Plaintiffs' individual variation, Dr. Grandjean cannot reliably opine on whether Dr. Ducatman's proposed medical monitoring *collectively* "differs from that provided to anyone who sees a doctor regularly, and is useful for early identification of injury." (Dkt. 107-1 at 28 (citing Dkt. 105 at 6).) Like Dr. Ducatman, he did not examine or speak to any Plaintiffs; did not review any Plaintiff's medical records, deposition transcript, or interrogatories; or even consider any facts about Plaintiff-specific water consumption practices. (Grandjean Tr. at 34:14-36:23.) Having ignored "[o]ne of the basic and most useful tools in diagnosis and treatment of disease," RMSE at 670, he cannot say whether any of the Plaintiffs received any of the proposed medical tests as part of their routine medical care. (Grandjean Tr. at 46:13-18.)

[redacted] (Guzelian Rpt. at 29.) One of the fundamental precepts of preventive testing—as with all medical care—is that one should avoid doing more harm than benefit. (Grandjean Tr. at 194:5-8.) Thus, Dr. Grandjean agrees that it "would be normal" to consider the "whole range of possible risks" and benefits of medical monitoring when assessing its utility. (*Id.* at 175:10-14, 180:14-181:2.) He also acknowledges medical monitoring carries the substantial risk of an erroneous test result—such as a false positive and false negative—or overdiagnosis (that is, "diagnosed without justification"). (*Id.* at 184:2-23.) Such errors can lead to a number of unnecessary harms that include

uncomfortable, expensive, and potentially harmful testing; additional medical consultations; unwarranted treatments or surgeries; delayed diagnoses and treatments; and psychological harm, such as anxiety, fright, and social stigma. (*Id.* at 184:2-23, 186:6-187:13.) Because he never evaluated, consulted, or spoke to any of the Plaintiffs, Dr. Grandjean could not make those assessments. Similarly, he fails to evaluate whether monitoring would benefit the proposed class, [redacted] (Mandel Reb. Rpt. at 6.) [redacted] (*Id.* at 43, 91; *see also id.* at 50, 69.) He says Dr. Ducatman's medical monitoring opinion is "justified," but admits he has not "undertaken to determine whether any particular tests or diseases for which Doctor Ducatman proposes to medically monitor [are] warranted." (Grandjean Tr. at 173:9-21, 196:17-23.) Accordingly, Dr. Grandjean's opinions regarding medical monitoring are unreliable.

b. Dr. Grandjean's Analysis Under Regulatory Principles Is Incompatible With Standards of Proof in Tort

Attempting to address general causation, Dr. Grandjean opines that "elevated exposure to PFOA ... results in an increased risk of harm." (Grandjean Rpt. at 70.) He reaches this opinion based on a subjective process of standardless introspection using an arbitrary exposure threshold, a cherry-picked record, and regulatory risk assessments and the assumptions that characterize them. This is not the type of reliable methodology required by Rule 702 and *Daubert*.

As Judge Weinstein explained in *Agent Orange*, there is a fundamental distinction between the standards used in regulatory risk assessments and liability in tort:

> The distinction between avoidance of risk through regulation and compensation for injuries after the fact is a fundamental one. In the former, risk assessments may lead

> to control of a toxic substance even though the probability of harm to any individual is small and the studies necessary to assess the risk are incomplete; society as a whole is willing to pay the price as a matter of policy. In the latter, a far higher probability (greater than 50%) is required since the law believes it unfair to require an individual to pay for another's tragedy unless it is shown that it is more likely than not that he caused it.
> …
> A government administrative agency may regulate or prohibit the use of toxic substances through rulemaking, despite a very low probability of any causal relationship. A court, in contrast, must observe the tort law requirement that a plaintiff establish a probability of more than fifty percent that the defendant's action injured him.

In re Agent Orange Prod. Liab. Litig., 597 F. Supp. 740, 781, 785 (E.D.N.Y. 1984) (citations omitted), *aff'd*, 818 F.2d 145 (2d Cir. 1987); *see also Glastetter v. Novartis Pharm. Corp.*, 252 F.3d 986, 991 (8th Cir. 2001); *Mitchell*, 165 F.3d at 783 n.3.

Yet throughout his opinion, Dr. Grandjean frames his analysis in terms of how regulatory and advisory bodies would evaluate risk and, in particular, "weight-of-evidence procedures applied by regulatory agencies and international organizations." (Grandjean Rpt. at 4-5; *see also id.* at 18-19, 63-64, 70.) Courts have repeatedly rejected attempts by experts to model their causation opinions on the risk assessment approaches of regulatory and advisory bodies:

> The experts employ a "weight of the evidence" analysis used by organizations such as the World Health Organization's International Agency for Research on Cancer (IARC), OSHA, and the EPA to rate the carcinogenicity of various substances in humans.
> . . .
> We are also unpersuaded that the "weight of the evidence" methodology these experts use is scientifically acceptable for demonstrating a medical link between Allen's EtO exposure and brain cancer. ***Regulatory and advisory bodies such as IARC, OSHA and EPA utilize a "weight of the evidence"*** method to assess the carcinogenicity of various substances in human beings and suggest or make prophylactic rules governing human exposure. This methodology results from the ***preventive perspective*** that the agencies adopt in order to reduce public exposure to harmful substances. The agencies' threshold of proof is ***reasonably lower than that appropriate in tort law***, which "traditionally make[s] more particularized inquiries into cause and effect" and requires a plaintiff to prove "that it is more likely than not that another individual has caused him or her harm."

Allen, 102 F.3d at 196, 198 (emphasis added) (quoting *Wright v. Willamette Indus., Inc.*, 91 F.3d 1105, 1107 (8th Cir. 1996)).

Federal courts have echoed and applied this caution in other cases involving PFOA:

> [A] risk assessment is of limited utility in a toxic tort case, especially for the issue of causation, because of the risk assessment's distinct purpose. Risk assessments have largely been developed for regulatory purposes and thus serve a protection function in providing a level below which there is no appreciable risk to the general population.
> …
> Because a risk assessment overstates the risk to a population to achieve its protective and generalized goals, it is impossible to conclude with reasonable certainty that any one person exposed to a substance above the criterion established by the risk assessment has suffered a significantly increased risk.

Rhodes, 253 F.R.D. at 377-78; *accord Rowe*, 2008 WL 5412912 at *16, 18-19.

Dr. Grandjean repeats this identical error here. Specifically, he repeatedly seeks to criticize the defense experts for using causal criteria that are not in accordance with "an assessment of the weight of the evidence, as applied by agencies, such as ATSDR, EPA, NTP [U.S. National Toxicology Program], EFSA [European Food Safety Authority], and IARC." (Grandjean Rpt. at 70; *see id.* at 4, 19; Grandjean Tr. at 84:5-85:1.) In turn, he likens his approach to the regulatory agencies' risk assessments and purports to rely on their methods and principles:

Q. Does the weight of the evidence assessment you performed in this litigation conform to the approaches of the ATSDR, EPA, NTP, EFSA, and IARC in conducting risk assessments?
A. I believe so.
Q. Is it fair to say that regulatory and advisory bodies, such as IARC, OSHA, and EPA, utilize a weight of the evidence method to assess the carcinogenicity of various substances in human beings and suggest or make prophylactic rules governing human exposure?
A. I believe so.
Q. Is it also fair to say that regulatory and advisory bodies such as ATSDR, EPA, NTP, and EFSA utilize a weight of the evidence method to assess noncarcinogenic endpoints of various substance in human being and suggests or make prophylactic rules governing human exposure?
A. I believe so.

(Grandjean Tr. at 85:2-19.)

Dr. Grandjean cannot reliably apply regulatory "weight of the evidence" risk assessment principles to offer a medical causation opinion in tort. [redacted] (Schwartz Reb. Rpt. at 9.) Regulatory risk assessments are founded on standards that "are set for purposes far different than determining the preponderance of evidence in a toxic tort case" since they "traditionally include protective factors to reasonably ensure that susceptible individuals are not put at risk." RMSE at 665-66. Dr. Grandjean concedes as much.[18]

Q. Is it a basic tenet of regulatory public health policy to in effect err on the side of caution?
A. I would say so.
…
Q. The manner in which one errs on the side of caution in establishing regulatory public health policy is not something that one has to do in a basic science environment, is it?
A. When you say so. I would think that is not what you want to do because no science is perhaps a major input that the regulatory agencies would want.
…
Q. Does the EPA apply uncertainty factors to account for the extrapolation of results in experimental animals to humans, inter individual var[i]ability including sensitive subgroups, extrapolation from a lowest observed adverse effect level to a no observed adverse [e]ffect level, extrapolation of results from subchronic exposure to chronic exposures and database inadequacies?
A. That is my understand[ing].
Q. A risk assessment may incorporate multiple uncertainty factors to calculate a regulatory exposure level; is that correct?
A. That's my understanding.
…

[18] Despite invoking agency methodologies for conducting risk assessments, Dr. Grandjean disagrees with the results of the risk assessments performed by EPA, ATSDR, and EFSA. For example, these agencies have recently issued PFOA exposure guidelines for drinking water that range from 3 to 70 ng/L. (Grandjean Rpt. at 67.) He opines that these exposure limits are too high and contends that they should be less than 1 ng/L. (Grandjean Tr. at 74:20-75:14.) Although he claims to follow the same approach as these bodies, he does not point to any regulatory or advisory body that supports this assessment.

Q. Given the methods, assumptions, and uncertainty factors that are used in regulatory risk assessments, the permissible exposure levels that are calculated are intended to be protective not predictive?
A. No. They are intend to be virtually protective for the exposed population.
…
Q. Given the methodology, assumptions and safety factors that characterize regulatory risk assessments, the permissible exposure levels do not provide predictive information about actual clinical risks for exposures that exceed such levels, do they?
A. No.

(Grandjean Tr. at 71:23-72:16, 81:18-82:24.)

This protective perspective cannot satisfy the requirements for expert testimony in a tort suit. Whereas "[a] regulatory agency ... may choose to err on the side of caution," courts "are required by the *Daubert* trilogy to engage in objective review of evidence to determine whether it has sufficient scientific basis to be considered reliable." *Rider*, 295 F.3d at 1201. Thus, reliance on such approaches is not "scientifically acceptable" to demonstrate that an adverse health effect results from a chemical exposure. *Allen*, 102 F.3d at 198. Nor do the approaches used by regulatory agencies, with their "reasonably lower" "threshold of proof," track the legal burden of proof in tort. *Id.*[19]

Dr. Grandjean does not appreciate these fundamental distinctions. He cannot "answer" whether the standards for testing causal hypotheses are the same in experimental science and regulatory public health policy. (Grandjean Tr. at 71:17-22.) Nor can he "answer" whether there is reason to err on the side of caution in a toxic tort suit where scientific reliability, rather than regulatory public health policy, is at issue. (*Id.* at 72:17-22.) Yet the far different assumptions

[19] "Actions in tort for damages focus on the question of whether to transfer money from one individual to another, and under common-law principles ... that transfer can take place only if one individual proves, among other things, that it is more likely than not that another individual has caused him or her harm." *Wright*, 91 F.3d at 1107.

that characterize the methods used by regulatory agencies with a far different goal renders Dr. Grandjean's reliance on them unreliable and inadmissible.

c. Dr. Grandjean's Subjective Causation Opinion Is Not Reliable

Dr. Grandjean offers no support for the assertion that his so-called "weight-of-the-evidence" approach is "commonly accepted" in the epidemiological community. (Grandjean Rpt. at 27.) [redacted] (Guzelian Reb. Rpt. at 90.) [redacted] (Mandel Reb. Rpt. at 22.) Thus, "the single most serious flaw" in Dr. Grandjean's approach "is the most basic: he simply has not set forth the methodology he used to weigh the evidence." *Magistrini v. One Hour Martinizing Dry Cleaning*, 180 F. Supp. 2d 584, 606 (D.N.J. 2002). Instead, he states only that he employed a "weight-of-the-evidence approach" whereby he "evaluat[ed] the weight of different types of evidence," according to his "judgment." (Grandjean Rpt. at 11; Grandjean Tr. at 88:5-11.) "'Judgment' does not substitute for scientific method; without a reliable method, result-oriented 'judgment' cannot be distinguished from scientifically or methodologically-based judgment." *Magistrini*, 180 F. Supp. 2d at 608. "[R]eliability within the meaning of Rule 702 requires a sufficiently rigorous connection between that methodology and the expert's conclusions." *Nimely*, 414 F.3d at 396. "Before a court can evaluate the reliability of an expert's methodology, the expert must employ one." *Milanowicz*, 148 F. Supp. 2d at 535. His failure to demonstrate that his approach to "weighing and discounting" information followed a "methodological systematic process" should be "the heart of this Court's inquiry," *Magistrini*, 180 F. Supp. 2d at 607, and warrants exclusion.

Dr. Grandjean's methodology is inscrutable. "To ensure that the ... weight of the evidence criteria is truly a methodology, rather than a mere conclusion-oriented process ... there must be a scientific method of weighting that is used and explained." *Zoloft*, 858 F.3d at 796 (citation

omitted). In particular, "an expert must explain 1) how conclusions are drawn for each ... criterion and 2) how the criteria are weighed relative to one another." *Id.* He says he evaluated each piece of evidence to determine the weight to assign it (Grandjean Tr. at 90:4-6), but his criteria are not meaningfully defined [redacted] (Mandel Reb. Rpt. at 22; *see also* Guzelian Reb. Rpt. at 49, 64, 85-87, 90-91; Calabrese Reb. Rpt. at 4-6; Schwartz Reb. Rpt. at 4, 8-10.) [redacted] (Schwartz Reb. Rpt. at 8.)

"[I]t is imperative that experts who apply multi-criteria methodologies such as ... the 'weight of the evidence' rigorously explain how they have weighted the criteria." *Mirena*, 2018 WL 5276431, at *27. In these circumstances, "courts have insisted on a clear explication of the weighting assigned to the different criteria ... [and] demanded that the expert's application of the individual criteria be performed with proper rigor." *Id.* Yet Dr. Grandjean is silent as to the details of his weighting process or how much weight any one piece of evidence had in his analysis.

> Q. What was your method for weighing studies according to the statistical method that they used?
> A. ***I don't understand the question.***
> Q. If you applied different weights to each study, according to the statistical methods, how did you determine what weight to apply?
> A. It was not the only aspect. Clearly, if a faulty statistical method was used for the case, I would take that into consideration; but your question is ***so general it is hard to answer it.***

(Grandjean Tr. at 90:14-91:14 (emphasis added).)

Thus, while Dr. Grandjean refers generally to certain characteristics of studies and their findings, he does not attempt to integrate and ***weigh*** those characteristics in a systematic manner. (*Id.* at 87:17-23.) His approach applies a qualitative "relative weight" to the evidence he considered in place of a quantitative approach of "assigning a number to it." (*Id.* at 89:8-13.) That

subjective approach is a poor fit where many attributes of the studies he cited—including statistical significance, power, and relative risk—are disposed to quantitative weighting. "By leaving obscure the weight that he attaches to each of the[se criteria]," his "unscientific 'black box' approach ... entirely prevents the finder of fact, or other experts seeking to validate or check his work, from conducting a meaningful and informed review." *Mirena*, 2018 WL 5276431, at *28.

The apparent absence of such predetermined criteria to reliably guide his analysis illustrates why "such methodologies are virtually standardless and their applications to a particular problem can prove unacceptably manipulable." *Id.* at *27. For example, Dr. Grandjean's testimony leaves unanswered what *ad hoc* adjustments he made to his analyses, such as his inconsistent treatment of findings from small studies in a consistent manner. In some instances, he points to studies' small numbers to rationalize findings that appear to undermine his opinions, whereas otherwise he completely declined to "consider[]" some studies due to their "small numbers" or "other weaknesses." (Grandjean Rpt. at 39, 46, 56.) Likewise, he does not explain how his suspicions regarding "industry-affiliated" or "industry-supported" research (Grandjean Rpt. at 23, 39, 70) affected his opinion. With such gaps in his explanations, the Court cannot be assured that his opinion is "based on methods and procedures of science, rather than on subjective belief or unsupported speculation." *Magistrini*, 180 F. Supp. 2d at 603.

Because he fails to set out the specific method for weighting, weighing, and integrating evidence, this Court, like the Third Circuit in *Zoloft*, cannot determine whether "[t]he particular combination of evidence considered and weighed here has [] been subjected to peer review." 858 F.3d at 796 (quoting *Magistrini*, 180 F. Supp. 2d at 602). For such a subjective approach, "there are no 'standards controlling the technique's operation.'" *Mirena*, 2018 WL 5276431, at *27 (quoting *Daubert* 509 U.S. at 594). The "malleable and vague approach" Dr. Grandjean used to

develop his causation opinion "is in tension with first principles under *Daubert*." *Id.* at *44. His analysis "makes it all too easy ... to manipulate the [various methodological] factors to support a desire conclusion of causation, and far too hard for an ensuing expert to replicate and rigorously test the expert's analytic approach." *Id.* Impossible to validate, his opinion is unreliable.

d. Dr. Grandjean Failed to Evaluate the Totality of the Data

Dr. Grandjean's opinion is also unreliable because he cherry-picked from the larger body of scientific literature. "When experts rely on epidemiological evidence to support causation, they must provide the jury with a full picture of the state of the field." *K.E.*, 2017 WL 440242, at *10 (citing *Guardians*, 633 F.2d at 240). When an expert "cherry-pick[s] the facts he considered to render an expert opinion ... such a selective use of facts fails to satisfy the scientific method and *Daubert*." *Barber*, 17 F. App'x at 437. He, likewise, acknowledges that selective "picking the evidence in accordance with the conclusions [one] apparently want[s]," like he has "seen expert witnesses do," is inconsistent with a valid and reliable methodology. (Grandjean Tr. at 25:6-20.)

At the outset, Dr. Grandjean cherry picks evidence by conflating results for PFOA and other PFASs. Though his bottom-line opinion (and Plaintiffs' claims) are limited to PFOA exposure, his endpoint-by-endpoint, summary assessments are framed in terms of ***PFAS*** exposure. (Grandjean Rpt. at 28, 32, 37, 39, 41, 48, 51, 55.) In many instances, his discussion described findings only for PFAS exposures other than PFOA or referred generically to PFAS without identifying whether PFOA was measured (*see, e.g.*, *id.* at 30, 35). He concedes the biological response to two chemical substances in the same chemical class may be different (Grandjean Tr. at 100:2-5), but does not explain whether he treated or weighed study findings involving PFOA differently than those involving other PFASs. (*See id.* at 101:4-9.) Courts "regularly exclude expert opinions built on analogies to different chemical compounds than the one at issue," *Mirena*, 2018 WL 5276431, at *61, since "[e]ven minor deviations in molecular structure can radically

change a particular substance's properties and propensities." *Id.* (quoting *Glastetter*, 252 F.3d at 990). In the absence of "good grounds for treating these [various] chemicals similarly" or a "weighting adjustment for them," *Magistrini*, 180 F. Supp. 2d at 604, an expert's use of evidence for a chemical substance other than the one at issue renders his opinion unreliable. Dr. Grandjean fails to offer any such grounds or adjustment, rendering his causation opinions unreliable.

Moreover, within the body of PFAS literature he evaluated, Dr. Grandjean does not provide a fair and complete picture of the scientific literature concerning PFOA exposure. Though Dr. Grandjean claims to have conducted a "***reasonably*** comprehensive review of the epidemiological evidence" (Grandjean Rpt. at 27 (emphasis added)), the [redacted] (Guzelian Reb. Rpt. at 80.) Likewise, he cannot tie the representation that he "selected the ***most relevant*** studies" to any valid criterion for evaluating causation. (Grandjean Rpt. at 27 (emphasis added).) Instead, he falls back on the same inscrutable methods that doom his opinion: the selection criteria were "a matter of the weight of the study," that is, "whether it contributed [] weighty evidence." (Grandjean Tr. at 89:1-7.) [redacted] (Mandel Reb. Rpt. at 32.) [redacted] (Guzelian Reb. Rpt. at 80.)

Nor does Dr. Grandjean's report provide any basis to infer that he systematically evaluated even the studies he ***did*** cite. In *Mirena*, the court criticized the expert for her limited engagement with the scientific literature: "Beyond citing these studies, Dr. Plunkett does not discuss any of

them in more than a sentence." 2018 WL 5276431, at *34. As in *Mirena*, Dr. Grandjean's discussion of the studies he cites is limited to a one- or two-sentence, high-level summary. Most of these short summaries do not describe important statistical details from the studies (such as the *p*-value or relative risk), assess study-specific issues of confounding or bias, or attempt to identify and reconcile contradictory findings. And where he cites studies that are not fully consistent with his thesis, he often dismisses their validity or relevance in a cursory manner (*see, e.g.*, Grandjean Rpt. at 30, 44-45) or by questioning the authors' motives (*see, e.g.*, *id.* at 49).

His results-driven approach to the scientific evidence has also led to over-reliance on certain studies. For example, Dr. Grandjean relies heavily on studies he conducted in the Faroe Islands for his opinion regarding immunotoxicity, an endpoint for which Dr. Ducatman is not proposing monitoring of any sort. (*See id.* at 28-29, 31, 39, 43, 52.) He fails to address whether his Faroe-based findings apply to the Vermont population. For example, the inhabitants of the Faroe Islands are exposed to a variety of chemicals through a diet that is traditionally heavy in marine foods, including whale meat and blubber, seabirds and eggs, fatty fish, and puffin. (Grandjean Tr. Ex. 7 at 177-79.) He admits that whale meat and blubber, seabirds and eggs, and puffin are not typical components of the average diet in Vermont. (Grandjean Tr. at 117:20-118:6.) Likewise, the Faroese are a genetically homogenous population that are susceptible to high rates of certain heritable disorders. (*Id.* at 130:6-13.) How such characteristics limit these studies' validity he does not say. (*See* Mandel Reb. Rpt. at 34-35.) Nor does he indicate whether he discounted the "weight" these studies carried in his analysis. This is not reliable.

e. Dr. Grandjean Lacks A Reliable Approach To Infer Causation

Dr. Grandjean's opinion is inadmissible for the additional reason that it fails to apply the correct standard or a reliable method for inferring causation. He erroneously contends that the standard that governs the inquiry in this matter is whether "it is more likely than not that PFOA is

associated with the particular outcomes." (Grandjean Tr. at 101:18-102:11 (emphasis added).) This mistake reveals a fundamental error in his analysis. A statistical association "*is not equivalent to causation*" and it does not "necessarily imply a causal effect." RMSE at 552 & n.7. Though he admits that "***association***" is not a substitute for "***causation***" and that distinguishing between the two concepts is important (Grandjean Tr. at 57:10-18 (emphasis added)), he fails to uphold that principle.

Dr. Grandjean's opinion lacks any discussion of the Bradford Hill criteria [redacted] (Guzelian Rpt. at 87; *see* Mandel Reb. Rpt. at 27.) In fact, the extent of his discussion of the Bradford Hill factors are the few pages he allocates in his report in attempting to criticize the defense experts' application of those criteria. (Grandjean Rpt. at 22, 24-26.) At no point does he affirmatively attempt to demonstrate how the factors apply to his analysis.

f. Dr. Grandjean's Selection of a Dose Threshold Is Arbitrary

To carry the burden in a toxic tort case, "a plaintiff must demonstrate 'the levels of exposure that are hazardous to human beings generally,'" *Mitchell*, 165 F.3d at 781, and the failure to lay a "reliable groundwork for determining the dose-response relationship" "signals a methodology" problem. *McClain*, 401 F.3d at 1241. But like Dr. Ducatman, Dr. Grandjean simply adopts the exposure threshold of "above-background" blood serum concentration that uses the average serum levels in the U.S. population. (Grandjean Rpt. at 10.) This opinion is driven more by litigation considerations than scientific principles and should be excluded.

Nowhere in his report does Dr. Grandjean justify the use of 2.1 µg/L serum blood level threshold exposure. Using this cut-point, many individuals nationwide have PFOA levels *above* that level. [redacted] (Guzelian

Rpt. at 19.) Defining a threshold based on an *average* measurement "is not a scientifically valid methodology." *Adams*, 2007 WL 1805586, at *4. Such an approach is "unreliable and misleading"; it "would deprive the term [abnormal] of all meaning." *Id.* at *4-5. For example, in *Adams*, under the expert's "approach, one would expect half the world's population of approximately six billion people (everyone with levels above the median) to be entitled to a special medical monitoring program." *Id.* at *4 (quoting *Allgood*, 2006 WL 2669337, at *28).

In the absence of scientific justification that 2.1 µg/L is a threshold for a biological effect, Dr. Grandjean's use of this descriptive statistic is arbitrary and unreliable. For example, while stating that 2.1 µg/L, a national average, is a "reasonable" threshold for the proposed Bennington class, he "ha[d] never considered" and "can't answer" the question of whether monitoring should be instituted for the millions of Americans in other locales whose PFOA blood serum concentrations are more than double that level. (Grandjean Tr. at 165:3-167:10.) He even acknowledges that average PFOA blood concentrations "is not really a proper background," but that did not prevent him from advocating its use in this action. (*Id.*)

Q. Let me ask you this. Would you say that millions and millions of Americans should have been getting this medical monitoring as a medical necessity in 1999 to 2000 when the background level was 5.21 micrograms per liter?
A. ***I have never considered that question*** .... [W]e know that at least in one of the studies that we did, five or six million Americans are exposed to elevated concentration of PFASes in drinking water. So parallel to the Vermont case and those numbers are included here. That's why this is not really a proper background. It is actually too high. Maybe it was even much too high in the past.
Q. I guess my question is, if anybody in a population has got 5.2 micrograms per liter of PFOA in their blood, would you say that they need medical monitoring as a medical necessity?
A. I would not say that because that ***depends on the circumstances***. I understand the ***circumstances here are quite specific in that there is a local source, and we know exactly comes through drinking water***....
Q. If the exposure level is the same from an individual in Bennington and an individual in Peoria, Illinois, they have the same identical blood levels, what difference does that make as to whether they require medical monitoring for potential future disease?

A. ***I can't answer that. Medical monitoring in this particular case has been defined as it is here and all I am saying that is reasonable. I can support that.*** And the way that Doctor Ducatman has described it, I am in favor of that. I have not been asked to look the state of Illinois and specific locations. I would give you that those elevations and serum concentrations will result necessarily in an increased risk. That relates to my expert report here.

Q. I guess what I am sort of having trouble getting my head around is if a person has got 5.1 micrograms per liter of PFOA in his or her blood in California or Arizona or Texas or Missouri or Mississippi or New Jersey or Vermont or New Hampshire, why should the particular location where that person resides make a difference from a clinical perspective as to whether they need medical monitoring for exposure to PFOA?

A. I completely understand your question. All I can say, I didn't comment on medical monitoring. I did look at Doctor Ducatman's report and I think he argued that convincingly. ***I have not seen similar considerations on other locations in the United States.*** I do insist that they have an increased risk as well, but whether that should trigger perhaps a completely different circumstances of medical monitoring, I have no opinion.

(*Id.* at 165:3-167:10 (emphasis added).) Notably, the sole consideration that Dr. Grandjean asserts for distinguishing Bennington residents from the rest of the U.S. population is that they have been "exposed to PFOA from ***Saint-Gobain***." (*Id.* at 78:2-8, 164:9-165:2 (emphasis added).) This testimony reveals that he has not used a principled scientific or medical standard in advancing his opinions. The availability of an identifiable defendant is not a scientific criterion. It is a litigation-driven one.

In any event, a PFOA blood serum concentration of 2.1 µg/L cannot serve as a reliable threshold because it is not a stable description of "background" levels. Rather, the national average has declined over time. (Grandjean Tr. Ex. 11 at 338; Grandjean Tr. at 163:23-164:2.) For example, twenty years ago, the mean blood serum concentration was 5.21 µg/L. (Grandjean Tr. Ex. 11; Grandjean Tr. at 164:3-5.) Thus, the proposed inclusion criterion of 2.1 µg/L for determining who is a member of a putative class is a function of the timing of this litigation, not a risk-based determination. Such an arbitrary standard cannot withstand scrutiny under *Daubert*.

B. Plaintiffs' Experts' Legal Opinion Testimony Is Inadmissible

1. Dr. Hopke and Dr. Siegel's Regulatory Opinions Are Inadmissible

In addition to their fate and transport opinions, Drs. Hopke and Siegel also proffered "merits" reports in which they opine that Chemfab violated applicable regulations and/or acted unreasonably. (Hopke Merits Rpt. at 1, 5-6; Siegel Merits Rpt. at 2-1, 2-5.) These opinions amount to narratives stating conclusions on legal issues without any scientific methodology.

"Before a court can evaluate the reliability of an expert's methodology, the expert must employ one." *Milanowicz*, 148 F. Supp. 2d at 535. Dr. Hopke has not put forth any discernible scientific methodology for determining compliance with Vermont guidelines or what is "reasonable" for companies working with perfluorinated compounds. Instead, he provides his "view upon reading [ ] factual documents" supplied by counsel and then "applying ***what [he] understand[s] the law to be***." (Hopke Tr. at 194:14-17 (emphasis added).) His review of those documents does not require him to "apply any principle of chemistry"—his area of expertise—"to reach [any] conclusion" about those documents. (*Id.* at 192:6-193:10.) Nor does he "have to apply any of [his] expertise to form a judgment" as to what certain documents say or mean. (*Id.* at 194:6-13.) Absent a methodology that is "objective" and "independent," *Moore*, 151 F.3d at 276, his merits opinion is "connected to existing data only by" his "*ipse dixit*." *Joiner*, 522 U.S. at 146.

The same goes for Dr. Siegel, who purports to offer his so-called "professional judgment that Chemfab/Saint-Gobain either knew or should have known that PFOA emitted from their operations in North Bennington would have led to [PFOA] groundwater contamination in Bennington and North Bennington long before ... 2016." (Siegel Merits Rpt. at 2-5.) But Dr. Siegel never worked for Chemfab or Saint-Gobain (Siegel Tr. at 174:10-14), and he has very little additional knowledge regarding the documents he relies on, such as who created or received these documents. (*See id.* at 189:13-193:18.) Moreover, Dr. Siegel has no methodology for determining

what a company knew or should have known. To the contrary, he admits his opinion is speculative:

> Q. In support of this opinion about what ChemFab … knew or either should have known, you don't refer to any basis in fact for that opinion, correct?
> A. I think there's [a] lot of basis in fact. A lot was known back, at least since 2003 and before then, according to documents cited in Hopke's report, that it was well-known enough that emissions of PFOA from stacks occurred and could contaminate the environment. So it strikes me that Saint-Gobain / ChemFab must have been aware that this was a potential problem long before it was first discovered.
> Q. That's speculation on your part, correct?
> A. ***I think it's speculation based on common sense.***

(*Id.* at 204:18-205:7 (emphasis added).) "[P]roffered expert testimony should be excluded if it is speculative or conjectural." *Major League Baseball*, 542 F.3d at 311 (citation omitted). "It is axiomatic that an expert, no matter how good his credentials, is not permitted to speculate." *Goebel v. Denver & Rio Grande W. R.R. Co.*, 215 F.3d 1083, 1088 (10th Cir. 2000). Dr. Siegel's admittedly speculative opinion should be excluded.

Drs. Hopke and Siegel's purported merits opinions are also unhelpful. They do nothing more than attempt to provide a veneer of "expert" credibility to what is essentially lawyer advocacy. For example, Dr. Hopke's merits report instead provides a biased, subjective narrative of events and summary of documents. [redacted] (Hopke Merits Rpt. at 6-8.) Such subjective opinions on reasonableness "are inadmissible because they usurp the function of the judge and direct the jury to a particular conclusion." *Hiramoto v. Goddard Coll. Corp.*, 184 F. Supp. 3d 84, 97 (D. Vt. 2016), *aff'd*, 684 F. App'x 48 (2d Cir. 2017). "It is a well-established rule in this Circuit that experts are not

permitted to present testimony in the form of legal conclusions." *Id.* (quoting *Densberger v. United Techs. Corp.*, 297 F.3d 66, 74 (2d Cir. 2002)). Dr. Hopke's attempt to do so is inadmissible.

Likewise, Dr. Siegel relies primarily on documents he describes as "DuPont Internal Memoranda 1984-1988" to opine that "[e]vidence that PFOA dispersed to the atmosphere" and entered groundwater "first came to the [EPA's] attention at DuPont's Washington Works facility in Parkersburg, West Virginia. There, as early as the 1980's, PFOA had been measured in nearby consumed groundwater." (Siegel Merits Rpt. at 2-2.) These putative DuPont internal memoranda were not produced in this litigation; they were not found in the files of Chemfab or Saint-Gobain. Instead, Plaintiffs' counsel selected and provided these documents to Dr. Siegel. (Siegel Tr. at 189:13-25; 190:14-21.) Moreover, he has no knowledge, method, or expertise about these documents that allow him to proffer this "opinion." He does not know who created these documents; he does not know who received them; he does not know the meaning of several terms used in the documents; and he is not "used to seeing analytical reports from DuPont." (*Id.* at 189:13-193:18.) He denied that he has any basis for believing that any of the internal DuPont memoranda that he points to were ever sent to ChemFab or its employees. (*Id.* at 196:1-197:5.)

The narrative summaries of evidence proffered by Drs. Hopke and Siegel should therefore be excluded as "outside the proper scope of expert testimony." *In re Trasylol Prods. Liab. Litig.*, 709 F. Supp. 2d 1323, 1337 (S.D. Fla. 2010). Testimony that "merely repeat[s] facts or opinions stated by other potential witnesses or in documents produced in discovery" is improper "because it describes 'lay matters which a jury is capable of understanding and deciding without the expert's help.'" *In re Rezulin Prods. Liab. Litig.*, 309 F. Supp. 2d 531, 546 (S.D.N.Y. 2004) (citation omitted). "Such material, to the extent it is admissible, is properly presented through percipient witnesses and documentary evidence." *Id.* at 551. Likewise, opinion testimony regarding "the

intent, motives or states of mind of corporations … ha[s] no basis in any relevant body of knowledge or expertise" and should be excluded. *Id.* at 546. These experts' summary and interpretation of documents is advocacy, not science, and is inadmissible.

2. Mr. Mears's Opinions Are Unhelpful and Unreliable

a. The Purported "Violations" Do Not Fit This Case

Mr. Mears's opinion on purported regulatory violations is inadmissible for lack of fit because none of those alleged violations have a meaningful connection to Plaintiffs' theories of liability, causation, or damages. It should be excluded pursuant to Rules 402, 403, 404(b), and 702 as irrelevant, unduly prejudicial, improper "character" evidence, and unhelpful to the jury.

Other courts have excluded evidence of unrelated regulatory violations on these same grounds. For example, in *Langenbau v. Med-trans Corp.*, 167 F. Supp. 3d 983 (N.D. Iowa 2016), the court excluded opinion testimony regarding an air ambulance service's maintenance violations that were not sufficiently related to the accident at issue. *See id.* at 1003-04. The court explained that any "slender probative value is vastly outweighed by its potential for prejudice—inviting a liability verdict improperly based on an emotional response" to unrelated matters. *Id.* "[I]ntroduction of evidence on those matters could [also] be misleading or confusing to the jury, improperly distracting the jury from matters actually at issue in this case." *Id.* Similarly, in *Covic v. Berk*, 2014 WL 3510502 (W.D. Tenn. 2014), the plaintiff's expert opined that a trucking company's history of safety violations contributed to an accident involving one of its drivers. The court held that "[w]ithout some attempt to connect [the company's] history of prior safety violations to the facts of this accident, [expert] testimony about [the company's] other violations has the appearance of an impermissible attempt to prove [the company's] 'character in order to show that on a particular occasion the person acted in accordance with the character.'" *Id.* at *5.

As in the above cases, Mr. Mears fails to establish any meaningful connection between Plaintiffs' claims and the following purported regulatory violations:

Pre-Construction Permits: Mr. Mears opines that, from 1979 to 1990, Chemfab violated Vermont regulations by constructing six new towers without a pre-construction permit. (Mears Reb. Rpt. at 4-5.) Mr. Mears admits that DEC—acting within its discretion—issued a permit in 1990 with full knowledge that the towers had already been built, and imposed no penalties. (Mears Tr. at 100:5-15, 103:12-17, 104:4-105:12.) Mr. Mears opines that Chemfab violated the same regulations in 1998 by beginning construction of two new towers without a pre-construction permit. (Mears Reb. Rpt. at 5.) After Chemfab explained that this occurred due to a miscommunication and corrected the oversight, DEC imposed a modest $2,500 penalty, granted the permit, and allowed construction to proceed. (*See* Mears Tr. at 111:15-112:7, 113:21-24.) Mr. Mears disagrees with DEC's exercise of discretion and believes severe penalties were warranted. (*See id.* at 108:8-21, 115:14-116:6.) But Mr. Mears does not—and cannot—opine that the timing of Chemfab's permit applications caused or contributed to any PFOA emissions.

Nuisances and Objectionable Odors: Mr. Mears opines that Chemfab committed "over 100 documented violations" of Vermont regulations governing nuisance and objectionable odor. (Mears Reb. Rpt. at 6.) At deposition, Mr. Mears conceded this to be "an overstatement in [his] report," which erroneously treated each odor-related complaint by community members as a regulatory violation. (Mears Tr. at 116:20-117:12.) Because Mr. Mears failed to apply the regulatory standard for odor violations cited in his report, he does not know if any such violations even occurred. (*See id.* at 117:13-118:1.) Regardless, Plaintiffs do not assert claims based on odor or odor-related nuisance. Nor do their experts opine that PFOA emissions caused any such odors.

Visible Air Emissions: Mr. Mears opines that Chemfab at times exceeded regulatory limits on visible emissions, but does not opine that this had any impact on PFOA emissions. (Mears. Rpt. at 6.)

Catalytic Abators: Mr. Mears opines that Chemfab failed to properly operate and maintain catalytic abators as required by DEC-issued permits. (*Id.* at 6-7.) Yet he also opines that the abators were not intended to remove, and were not effective in removing, PFOA from emissions. (*See* Mears Tr. at 130:13-131:4.) Accordingly, he can offer no opinion regarding whether or to what extent these purported issues caused or contributed to any PFOA emissions. (*See id.* at 133:2-135:18.)

Hazardous Air Contaminants: Mr. Mears opines that Chemfab violated Vermont's Hazardous Air Contaminant ("HAC") rules by failing to test its air emissions for PFOA and report any such emissions to DEC. (Mears Reb. Rpt. at 7.) Yet he concedes that, even today, neither DEC nor EPA have included PFOA on their official lists of hazardous air contaminants. (Mears Tr. at 38:12-14, 39:3-9, 41:15-20, 154:1-4.) Nor have DEC or EPA established any screening or guidance levels against which to measure PFOA air emissions. (*Id.* at 148:21-149:5.) More importantly, Mr. Mears does not opine that Chemfab's purported violation of HAC rules caused or contributed to any PFOA emissions. Instead, he offers "pure speculation"—later rephrased as "informed speculation"—that if Chemfab had tested for and reported any PFOA emissions to DEC, "there would have been additional regulatory action." (Mears Tr. at 155:18-156:22.) This testimony should be excluded because "'it is speculative or conjectural'" and "without factual basis." *Major League Baseball*, 542 F.3d at 311.

In sum, Mr. Mears's opinions should be excluded because they concern purported regulatory violations that have no bearing on this case. Expert testimony regarding whether

Chemfab's conduct violated a series of regulations that do not even address PFOA emissions would not be helpful to the jury, would needlessly prolong and complicate the trial, and would severely prejudice Chemfab by inviting the jury to impose liability based on unrelated conduct.

b. Mr. Mears Invades the Province of the Court and Jury

Apart from its lack of fit, Mr. Mears's testimony is inadmissible legal opinion. He does not offer mere generalized testimony regarding DEC's regulatory scheme, practices, and procedures. Instead, he opines that "CHEMFAB/SAINT-GOBAIN VIOLATED VERMONT AIR POLLUTION CONTROL PERMITS AND REGULATIONS." (Mears Reb. Rpt. at 4.) These are inadmissible legal conclusions. Exclusion is required where, as here, expert testimony "expresses a legal conclusion," is "'phrased in terms of inadequately explored legal criteria,'" or "communicat[es] a legal standard—explicit or implicit—to the jury." *Hygh v. Jacobs*, 961 F.2d 359, 363-64 (2d Cir. 1992) (citation omitted). Such "opinions are inadmissible because they usurp the function of the judge and direct the jury to a particular conclusion." *Hiramoto*, 184 F. Supp. 3d at 97; *see also Rezulin*, 309 F. Supp. 2d at 547.

Courts in this Circuit and elsewhere have held that "expert witnesses may not opine as to whether a party violated a given regulation." *Cowden v. BNSF Ry. Co.*, 2013 WL 5442926, at *6 (E.D. Mo. 2013); *see also, e.g.*, *Langenbau*, 167 F. Supp. 3d at 1004. For example, the Southern District of New York precluded expert witnesses from testifying as to whether an automobile manufacturer's seat belt design "complied with or violated" federal safety standards. *Contini by Contini v. Hyundai Motor Co.*, 876 F. Supp. 540, 545 (S.D.N.Y. 1995). Mr. Mears should likewise be precluded from opining that Chemfab "violated" Vermont regulations, especially where his opinions contradict the contemporary findings of Vermont regulators.

In addition, Mr. Mears's opinions should be excluded because they are based on his own (erroneous) legal interpretation of the regulations. For example, he incorrectly opines that

Vermont's 1981 regulatory definition of "hazardous air contaminant" applied to PFOA. (Mears Reb. Rpt. at 7.) Yet that definition applied only to contaminants that, "in the judgment of the Secretary,"[20] are hazardous to health based on their "presence in the outdoor atmosphere."[21] (Mears Tr. at 136:13-137:19.) He is unaware of Vermont regulators ever having deemed exposure to PFOA "in the outdoor atmosphere" to be a health hazard. (*Id.* at 161:13-22.) Instead, he contends that the 1981 definition also applied to potential hazards from formerly airborne contaminants deposited in other environmental media. (*Id.* at 138:2-17.) [redacted] (*Id.* at 144:3-145:8.) It is Mr. Mears who is mistaken. Only in 1993—years after Chemfab and DEC worked collaboratively to conduct extensive air emissions testing and evaluation—did Vermont amend the relevant air pollution control rules to include exposures via "other environmental media." 1993 Vt. Legis. Serv. No. 92, at 1 (West). Thus, his legal interpretation is not only "'inadequately explored,'" *Hygh*, 961 F.2d at 363 (citation omitted), but incorrect.

Mr. Mears should also be precluded from offering inadmissible opinion testimony regarding Chemfab's or DEC's knowledge, motive, or state of mind. "[T]he knowledge, motives, or intent of individuals or organizations … are generally not proper subjects for expert testimony." *Drake v. Allergan, Inc.*, 2014 WL 5392995, at *5 (D. Vt. 2014). Such opinions "have no basis in any relevant body of knowledge or expertise." *Rezulin*, 309 F. Supp. 2d at 546.

For example, Mr. Mears should be precluded from speculating that, prior to 2002, regulators in other states "were concerned about PFOA," that Chemfab "was aware of those

[20] Vt. Admin. Code 16-3-100:5-101(26) (1981).
[21] Vt. Admin. Code 16-3-100:5-101(5) (1981).

concerns," that it "would likely have known that New York was regulating emissions of APFO," or that it "was aware of the [purported] need to test for and limit PFOA emissions." (Mears Reb. Rpt. at 8.) He should also be precluded from speculating about Chemfab's purported motives for "mov[ing] its operations to New Hampshire." (*Id.* at 4.) Likewise, he should be precluded from speculating about DEC's motives. Throughout his deposition, he suggested that political pressure—rather than a dearth of actual regulatory violations—might explain why DEC brought so few enforcement proceedings against Chemfab. (*See, e.g.*, Mears Tr. at 12:6-13, 74:15-75:11, 112:13-113:3, 114:17-24, 175:21-176:21.) Yet he admits that he has no basis to offer any such opinions to a reasonable degree of certainty. (*Id.* at 182:2-9.)

3. Mr. Unsworth Cannot Vouch for Others' Diminished Value Opinions

In addition to his opinion on purported groundwater damages, Mr. Unsworth also proffered a rebuttal to the opinions of Dr. Jackson and Mr. Phillips in which he maintains that the named Plaintiffs can provide admissible opinion evidence of the diminution in value of their homes allegedly due to PFOA. (Unsworth Prop. Reb. Rpt. at 7.) The Plaintiffs' lay opinion is inadmissible for the reasons set forth in Saint-Gobain's separate motion to exclude. Mr. Unsworth's legal opinion endorsing the admissibility of that testimony is likewise inadmissible.

Notably, Mr. Unsworth denied vouching for the reliability, accuracy, or validity of the Plaintiffs' estimates, which he denied having even reviewed at all. (Unsworth Reb. Tr. at 220:3-15, 236:24-237:4, 243:17-22.) Rather, he opines only that Plaintiffs should be permitted to offer this testimony because "Vermont law clearly recognizes property owners as competent to testify as to the value of their property." (Unsworth Prop. Reb. Rpt. at 7.) He says that allowing the Plaintiffs' lay opinions would be "reasonable" and that Plaintiffs "have the legal right and the information before them to make" such estimates. (Unsworth Reb. Tr. 236:12-237:7, 245:6-23.) He admits he is not a lawyer and that the legal authorities for this proposition were given to him

by Plaintiffs' counsel. (*Id.* at 131:17-19; 219:17-220:2.) The admissibility of evidence is a question of law. Mr. Unsworth's "expert testimony that expresses a legal conclusion" invades the province of the Court and should be excluded. *Hygh*, 961 F.2d at 363; *see also United States v. Scop*, 846 F.2d 135, 139 (2d Cir.), *on reh'g*, 856 F.2d 5 (2d Cir. 1988); *Marx & Co. v. Diners' Club Inc.*, 550 F.2d 505, 509-10 (2d Cir. 1977).

Mr. Unsworth attempts to provide a veneer of expert opinion on this subject by opining that homeowner estimates of property values can be reliable based on "publicly available information" from real estate websites like Zillow and Redfin. (Unsworth Prop. Reb. Rpt. at 7.) But the notion that this constitutes an opinion about the reliability of the Plaintiffs' opinions crumples in light of the fact that Mr. Unsworth did not speak with the Plaintiffs or review any of those opinions or their bases. (Unsworth Reb. Tr. at 186:6-12; 176:6-16; *see also id.* at 177:3-12, 232:17-21, 247:2-15, 264:13-22.) [redacted] (*See* Phillips Rpt. at 30-31; Phillips Reb. Rpt. at 19.) Moreover, Mr. Unsworth does not know how these websites estimate home values (Unsworth Tr. at 239:16-240:3), or if their techniques have been peer reviewed. (*Id.* at 241:7-12.) He provides no basis for the notion that these sites can accurately account for alleged diminution in property value due to PFOA. (*See* Phillips Reb. Rpt. at 19.) He cannot testify about the reliability of valuation methods that he does not understand and that Plaintiffs did not use.

Mr. Unsworth goes so far as to opine that these diminution in value opinions were permissible even if they were predicated on a logical fallacy. He says that the Plaintiffs were entitled to opine that, because they allegedly experienced diminution in value after discovery of

PFOA, therefore the diminution in value was attributable to PFOA. (Unsworth Reb. Tr. at 235:14-236:1.) Mr. Unsworth even acknowledges, unabashedly, that this was an expression of the temporal fallacy—or *post hoc, ergo propter hoc*—by assuming that chronology is the same as causation, and yet endorses its use by Plaintiffs:

> Q. Are you familiar with ***the fallacy of post hoc ergo propter hoc***?
> A. Yes.
> Q. What is that fallacy?
> A. Well, just because—effectively, just because something has changed at the same time something else has changed, they must be related, would be one way of saying it.
> Q. Yes. Just because something occurs after an event does not mean that it was caused by that event?
> A. Right.
> Q. But you're saying that the plaintiffs are allowed to do that here?
> …
> A. ***Yes.*** …

(*Id.* at 236:2-237:7 (emphasis added).) The courts disagree. They routinely reject opinion testimony predicated on the temporal fallacy, "which is as unacceptable in science as in law." *Black v. Food Lion, Inc.*, 171 F.3d 308, 313 (5th Cir. 1999); *McClain*, 401 F.3d at 1243; *Guinn v. AstraZeneca Pharm. LP*, 602 F.3d 1245, 1254 (11th Cir. 2010); *Moore*, 151 F.3d at 278. Mr. Unsworth's endorsement of that fallacy is inadmissible.

Mr. Unsworth also says that the Plaintiffs should be entitled to opine on alleged diminution of their property values due to PFOA because the U.S. Census relies on individual homeowner reports of property value. (Unsworth Prop. Reb. Rpt. at 6-7.) This is not just a legal conclusion, but also a manifestly wrong one. There are at least four major, undisputed differences between the Census data and the Plaintiffs' opinions in case. [redacted] (Phillips Reb. Rpt. at 18.) Second, the Census asks only about current property value, not about diminution due to specific environmental factors. (*See* Unsworth Reb. Tr. at 228:21-229:4.) Third, unlike here, the Census Bureau screens its data for plausibility and adjusts or eliminates outliers. (*Id.* at

230:3-9; Phillips Reb. Rpt. at 17.) And fourth, Census respondents have no incentive to misstate the value of their homes, whereas Plaintiffs have an interest in diminution in value opinions that may support a claim for damages. (*See* Unsworth Reb. Tr. at 229:5-23.) Mr. Unsworth's legal conclusions based on Census data are inadmissible.

Finally, Mr. Unsworth's opinion should be excluded due to a substantial risk of "unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence." Fed. R. Evid. 403. In this case, the risks of confusion and prejudice are high because Mr. Unsworth would be testifying with the authority of a credentialed expert to matters that are tremendously speculative. Such testimony "poses the risk of confusing and misleading the jury as it lends the imprimatur of the expert's qualifications and a stamp of credibility to what is otherwise rank speculation." *Rotman v. Progressive Ins. Co.*, 955 F. Supp. 2d 272, 283 (D. Vt. 2013). In addition, courts in this Circuit have excluded expert opinion that goes to another witness's credibility because of its tendency to confuse the issues, overly influence the jury, and raise distracting collateral issues. *See, e.g.*, *Nimely*, 414 F.3d at 398; *Doe v. Hartford Sch. Dist.*, 2018 WL 1064572, at *6 (D. Vt. 2018). Mr. Unsworth's attempt to vouch for the Plaintiffs' opinions presents similar issues, and should be excluded.

CONCLUSION

For the foregoing reasons, the Court should exclude Plaintiffs' expert testimony.

Dated: November 27, 2018

Respectfully submitted,

/s/ *R. Bradford Fawley*
R. Bradford Fawley
DOWNS RACHLIN MARTIN PLLC
28 Vernon Street, Suite 501
Brattleboro, VT 05301-3668
Telephone: (802) 258-3070
Facsimile: (802) 258-4875
bfawley@drm.com

Sheila L. Birnbaum (*pro hac vice*)
Mark S. Cheffo (*pro hac vice*)
Douglas Fleming (*pro hac vice*)
Bert L. Wolff (*pro hac vice*)
Lincoln Davis Wilson (*pro hac vice*)
DECHERT LLP
Three Bryant Park
1095 Sixth Avenue
New York, NY 10036
Tel: (212) 698-3500
Fax: (212) 698-3599
sheila.birnbaum@dechert.com
mark.cheffo@dechert.com
douglas.fleming@dechert.com
bert.wolff@dechert.com
lincoln.wilson@dechert.com

Attorneys for Saint-Gobain Performance Plastics Corp.

CERTIFICATE OF SERVICE

I hereby certify that, on November 27, 2018, I served the foregoing MEMORANDUM OF LAW IN SUPPORT OF SAINT-GOBAIN'S MOTION TO EXCLUDE PLAINTIFFS' EXPERT TESTIMONY on the following counsel by electronic case filing:

Gary A. Davis
James S. Whitlock
DAVIS & WHITLOCK, P.C.
21 Battery Park Ave., Suite 206
Asheville, NC 28801
Telephone: (828) 622-0044
Facsimile: (828) 398-0435
jwhitlock@enviroattorney.com
gadavis@enviroattorney.com

David F. Silver, Esq.
Timothy M. Andrews, Esq.
BARR STERNBERG MOSS SILVER & MUNSON, P.C.
507 Main Street
Bennington, VT 05201
Telephone: (802) 442-6341
Facsimile: (802) 442-1151
tandrews@barrsternberg.com
dsilver@barrsternberg.com

Emily J. Joselson, Esq.
James W. Swift, Esq.
LANGROCK SPERRY & WOOL, L.L.P.
P.O. Drawer 351
Middlebury, VT 05753
Telephone: (802) 388-6356
Facsimile: (802) 388-6149
ejoselson@langrock.com
jswift@langrock.com

DATED: November 27, 2018

/s/ *R. Bradford Fawley*
R. Bradford Fawley